# THE GROWTH AND DIVERSIFICATION OF THE SAUDI ARABIAN SHIPPING FLEET, 1973--1982

A THESIS SUBMITTED TO THE GRADUATE DIVISION OF THE
UNIVERSITY OF HAWAII IN PARTIAL FULFILLMENT
OF THE REQUIREMENTS FOR THE DEGREE OF

MASTER OF ARTS

IN GEOGRAPHY

MAY 1984

By

Bjørn Robertstad Aune

Thesis Committee:

Joseph R. Morgan, Chairman
Donald W. Fryer
John P. Craven

To Mor
With love
Bjørn (B.J.)

## ABSTRACT

The Saudi Arabian merchant fleet has grown a phenomenonal 7,349.7% in the last decade since the 1973/74 oil crisis. In January 1983 the Saudi fleet consisted of 347 ships totalling more than 4.3 million g.r.t. (~7.7 million d.w.t.) and ranked twentieth in the world. What is unclear and lacking in literature is indepth analysis of Saudi fleet development. This thesis fills that void.

The thesis examines the factors that have governed shipping development, namely: policy, economic growth, culture, and geography. Trade, industrialization, and port development have been the prime economic reasons for growth. Policy has been ambiguous, inconsistent, and at times negative. The government policy of bunker subsidies, however, has proven to be the principal proponent for acquisition of ships. Arab culture and geography have indirectly, but significantly, supported development.

Saudi shipping historically and currently is discussed. Fleet composition and diversification are analyzed both quantitatively and qualitatively. Complementing the text are appropriate statistical tables. The major shipping lines and ownership structure are reviewed. Lastly, the future of Saudi shipping is elaborated on accompanied by development projections.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF ILLUSTRATIONS

## ABBREVIATIONS AND ACRONYMS

| | |
|---|---|
| AIMCO | Arabian International Maritime Company, Ltd. |
| AMOC | Arabian Marine Operating Company |
| AMPTC | Arab Maritime Petroleum Transport Company |
| AMTA | Arab Maritime Transport Academy |
| AOC | Arabian Oil Company |
| API | American Petroleum Institute |
| APSCO | Arabian Petroleum Supply Company, S.A. |
| ARAMCO | Arabian American Oil Company |
| ASF | Arab Shipping Federation |
| AUXERAP | Societe Auxiliaire de L'Enterprise de Recherches et d'Activites Petrolieres |
| CASOC | California Arabian Standard Oil Company |
| CHEVRON | Standard Oil Company of California |
| c.i.f. | cost, insurance, and freight (refers to selling price) |
| D.R.Y. | Democratic Republic of Yemen |
| d.w.t. | deadweight tons (or tonnage) |
| E.I.U. | Economist Intelligence Unit, Ltd. |
| E.I.U.K. | refers to an Economist Intelligence Unit quarterly on Kuwait |
| E.I.U.S. | refers to an Economist Intelligence Unit quarterly on Saudi Arabia |
| EXXON | Standard Oil Company of New Jersey |
| f.o.b. | free onboard (refers to selling price) |
| GDP | Gross Domestic Product |
| GETTY | Getty Oil Company |
| GNP | Gross National Product |
| g.r.t. | gross registered tons (or tonnage) |
| HADEED | Saudi Iron & Steel Company |
| IDF | Industrial Development Fund |
| ISA | Islamic Shipowners Association |
| JSRY | Jiddah Ship Repair Yard |
| kg | kilogram(s) |
| km | kilometer(s) |
| lbs. | pounds |
| LDPE | Low-Density PolyEthylene |
| LNG | Liquified Natural Gas |
| LPG | Liquified Petroleum Gas |
| MOBIL | Mobil Oil Company |
| M.V. | Motor Vessel (refers to propulsion designation of vessel) |
| NORCEM | Norwegian Cement A/S |
| NSCSA | National Shipping Company of Saudi Arabia |
| OAPEC | Organization of Arab Petroleum Exporting Countries |
| OECD | Organization for Economic Co-operation and Development |
| OPEC | Organization of Petroleum Exporting Countries |
| p.c. | personal communication |
| Petromin | General Petroleum and Mineral Organization or Ministry of Petroleum and Mineral Resources |
| Petroship | Petromin Tanker and Mineral Shipping Company |
| REDEC | Saudi Research & Development Corporation, Ltd. |
| RO/RO | Roll On/Roll Off |

| | |
|---|---|
| SAMARCO | Saudi Maritime Company, Ltd. |
| SAMC | Saudi Arabian Methanol Company |
| SARIN | Saudi Arabian International Transport Company, Ltd. |
| SASCO | Saudi Arabian Shipping Company |
| SAUDEX | Saudi Exxon Company |
| SIPCA | Saudi International Petroleum Carriers, Ltd. |
| SLTTC | Saudi Livestock Transport & Trading Company |
| SMTC | Saudi Maritime Transport Company, Ltd. |
| SPA | Saudi Ports Authority |
| SPPC | Saudi Pecten Petrochemical Company |
| SUNOCO | Sun Oil Company |
| TENNECO | Tennessee Energy Company |
| TEU | 20 feet equivalent unit(s) |
| TEXACO | Texas Company |
| T.V. | Turbine Vessel (refers to propulsion designation of vessel) |
| U.A.E. | United Arab Emirates |
| UASC | United Arab Shipping Company, S.A.G. |
| U.K. | United Kingdom |
| ULCC | Ultra-Large Crude Carrier |
| U.N. | United Nations |
| UNCCLC | United Nations Code of Conduct for Liner Conferences |
| UNCTAD | United Nations Council on Trade and Development |
| U.N. Stat. Yrbk. | United Nations Statistical Yearbook |
| U.S. | United States |
| U.S.D.C. | United States Department of Commerce |
| VLCC | Very Large Crude Carrier |
| YANPET | Yanbu Petrochemical Company |
| Y.A.R. | Yemen Arab Republic |

# I. INTRODUCTION

## Premise For This Study

The tremendous increase in the number of vessels and tonnage of the Saudi merchant fleet in the years following the 1973/74 oil crisis can be related to the downstream effects of resource development, production, and revenue realization. The growth of the Saudi shipping fleet is not due to simply the natural consequences of traditional evolutionary economic development, but rather it is the result of an array of special circumstances concerning the oil resource, which with great rapidity produced a reorientation of international financial flows arising from the exploitation of that resource. The rearrangement of the world oil economy led to great wealth for Saudi Arabia, which today makes it one of the richest countries in the world in terms of per capita income.[1] Shipping, the focus of this thesis, is one of the sectors to have profitted.

This study addresses fundamental questions of development in regard to the shipping fleet, including why it developed, how, and the consequences of growth.

The specific research questions to be addressed herein are: why did the Saudis develop their shipping fleet to the extent of becoming the twentieth largest in the world; why has the development of the dry cargo fleet outpaced the growth of the Saudi petroleum transport fleet, when petroleum products are their greatest export; what are the specific factors for the developments; how has the Saudi fleet grown and diversified both in qualitative and quantitative terms; and, has the development of the shipping fleet had a beneficial or detrimental effect on the rest of the Saudi economy?

Literature on the subject of the Saudi shipping fleet and its development is virtually non-existent. For the most part this paper was compiled through searching of documents, statistics, government records, and personal communiques. Though there has been a proliferation of books on economic development in Saudi Arabia in the last six years, discussion of the Saudi merchant fleet is practically nil. Yusif A. Sayigh's The Economies Of The Arab World, Ragaei El Mallakh's Saudi Arabia -- Rush To Development, Donald M. Moliver and Paul J. Abbondante's The Economy Of Saudi Arabia, and Fouad Farsy's Saudi Arabia: A Case Study In Economic Development all lack mention of the shipping fleet. Under the sections titled transport, infrastructure, or international trade where one would expect to find some reference to the fleet one finds none. There is discussion of road, railroad, airline, and port developments but nothing on the fleet. There is only one rail line of about 582 km (Sayigh, 1978, 163) and yet it merits more attention than the fleet of 4,301,789 g.r.t..

One book where one might expect to find discussion on the development of the Saudi fleet, judging by its title, is Leslie Alan Glick's Trading With Saudi Arabia: A Guide to The Shipping, Trade, Investment, And Tax Laws Of Saudi Arabia. The sought after discourse on shipping turns out to be nothing more than a short statistical chart with cursory elaboration.

Charles Issawi's An Economic History Of The Middle East And North Africa starts out with a fine description on shipping in the Middle East but ignores the twentieth century. Concerning the twentieth century shipping structure all that is said is that there has been some growth, notably in tankers, but that overall the Arab fleet as a bloc is minor (Issawi, 1982, 61). This study attempts to remedy this deficiency.

## General Relevance Of Shipping Fleets

An analysis of a nation's shipping capability is an important index by which to measure economic development (Drewry Shipping Consultants Ltd., 1982). The possession of a national fleet usually indicates or, at least suggests, a strong level of economic development and can be used to distinguish between developing, developed, and western industrial advanced countries. Saudi Arabia has yet to attain the levels of industrial development, technological advancement, and economic integration that denote the western ultra-developed First World.

The role of shipping in general should not be underemphasized. Eightyfive to ninety percent of total dry cargo transport moves by sea with 85% of the world's deep-sea shipments engaged in international commerce (Lawrence, 1972, 57). Also, more than half of the world's long distance petroleum shipments originates in the Middle East. Of the world's long distance oil shipments in 1972, 51% was destined for western Europe, 26% went to Japan, and 3% was shipped to North America (Lawrence, 1972, 60--61). In terms of tonnage volume 58% of international trade was lifted by ships and 60% by value in 1973 (Frankel & Marcus, 1973, xv).

## Traditional Evolutionary Economic Development Scenario

Prior to the oil crisis of 1973/74 Saudi Arabia had for the most part been following a path of traditional evolutionary economic development.[2] A common development scenario can be viewed as consisting of six stages:

1. The arrival of outsiders (foreigners) into a region in search of wealth and the discovery of resources of value to the homeland.
2. Exploitation operations are initiated and continue for as long as possible.

3. The incorporation of the resource region into some form of politico-economic unit belonging to the exploiting country. The relationship can be in the form of a colony, protectorate, semi-autonomous state, or direct incorporation of the region into the mother country. In Saudi Arabia's case, the Kingdom maintained its independence but the modern economy was in the hands of the multinational companies. This relationship continues until the exploited country becomes strong enough to end it.
4. The foreign operations are either nationalized (with compensation), the foreigners are required to leave, or, because of physical conflict, the resource recovery operations are destroyed.
5. The resource country continues extraction but keeps all the revenues (or at least the majority share).
6. With the capital obtained from the sales of the resources the country proceeds to enhance its economic position, a process referred to in the oil industry as downstreaming. The process is usually slow and gradual. Some countries never realize economic development based on the resource base. This is because the resource(s) may not generate sufficient revenue because of low market value, there are other sources and substitute products (competition), demand is low, the country lacks expertise in handling its resource(s), or the country is unable to implement economic policies because of other factors (e.g. political instability).

While the preceding description ignores a number of other factors, and does not consider numerous variations, it generally describes traditional

evolutionary economic development. For the purpose of this thesis it is more than adequate.

Saudi Arabia has tended to follow this development pattern described but the last three stages of development occurred quickly, radically, and on an unprecedented scale. In the early nineteen-seventies the fourth, fifth, and sixth stages were all implemented in the span of a couple of years and resulted in a tumultuous change of the traditional world oil economy, sudden massive financial power to Saudi Arabia, and total alteration of the structure of economic development in the country.

The 1973/74 Oil Crisis

There were seven factors that brought about the 1973/74 oil crisis. First was the dependence of western Europe and Japan, and to a lesser degree the U.S., on Middle East oil. The energy industries of these nations were almost totally dependent on oil.

Second was a lack of alternative sources of oil, particularly the high API° quality of Middle East oil, and other energy production methods.[3] More than 60% of total world oil production comes from the Middle East (Fesheraki, 1982, p.c.), with Saudi Arabia alone producing about half of that (El Mallakh, 1982, 50). Saudi Arabia has the largest proven reserves in the world with 170,000,000,000 barrels of oil in the ground (El Mallakh, 1982, 50). In terms of the 34° API-rated high quality oil the percent share is larger.

Third was the concurrent nationalization throughout the Middle East oil producing countries of foreign oil operations. A majority of the oil producers such as Saudi Arabia, Kuwait, Libya, and Iraq nationalized or took control of the outside multinational oil companies' interests in the early nineteen-seventies. Aside from activities in the Partitioned

Zone which is a special concessional arrangement with Kuwait, Saudi Arabia took control over the foreign owned and dominated ARAMCO. In the midst of the 1973/74 oil crisis, on January 1, 1974, Saudi Arabia took 60% control of ARAMCO which prior to then was 75% owned by the American companies EXXON, CHEVRON, TEXACO, and MOBIL, with the remaining 25% owned by Saudi Arabia (E.I.U.S., 1977, No. 2).[4] It is worth noting that prior to December 20, 1972, ARAMCO was wholly American (E.I.U.S., 1973, No. 1). Since ARAMCO was the only oil company at all in Saudi Arabia and produced 96% of the Kingdom's oil (Moliver & Abbondante, 1980, 18) the takeover by the government effectively gave it control over 96% of oil production in the country. On that same date Kuwait, with Saudi concurrence, took 60% control over AOC which prior to then was 100% owned by the Japan Petroleum Trading Company (E.I.U.K., 1974, No. 2). Since AOC operates offshore in the territorial sea of the Partitioned Zone which is jointly claimed by Saudi Arabia and Kuwait and the two are good friends and share the revenues from production therein, the takeover by Kuwait assured Saudi Arabia of economic domination of AOC and larger revenues. Though GETTY, an American oil company, which operated onshore in the Partitioned Zone, did not succomb immediately to takeover, its production share was small and it had to subscribe to all oil policies dictated by the Kuwaiti and Saudi regimes.

Fourth was the action of the oil producing countries in enforcing their positions. OPEC bonded the Middle East oil producers in general while OAPEC united the strictly-Arab producers. These quasi-cartel associations prevented the oil companies and western governments from circumventing the stable hard-line producers and wooing those that were not hard-line, stable, or strong. The strength of OPEC and OAPEC was

demonstrated in the Arab oil embargo of the United States and the Netherlands; the refinery embargo of the Bahamas, Bahrain, Canada, Curacao, Puerto Rico, Trinidad, and selected ones in France, Greece, and Italy (E.I.U.S., 1973, Supplement); the initial 5% (10% by Saudi Arabia) cut in oil production in October 1973 rising to 30% (32% by Saudi Arabia) in November (E.I.U.S., 1973, No. 4); and, the later boycotting of those foreign companies dealing with both the Arab world and Israel such as Solitron Devices (U.S.), Currier-Smith Corporation (U.S.), World Investment Corporation of Japan, Jisa Holdings (Swiss), and Gestetner Holdings (U.K.) (E.I.U.S., 1979, No. 1). The use of oil as a weapon was only successful because Saudi Arabia was the world's largest oil exporter and third largest producer (El Mallakh, 1982, 50).

Fifth was the 1973 Middle East War that polarized the Arab and western worlds. The war between Egypt, Syria, and Israel created a tremendous rift in relations between the Arab world, which supported Egypt and Syria, and the western nations, which were mostly sympathetic to Israel. Saudi Arabia helped the Egyptian and Syrian war effort by "committing military forces," giving Egypt $27.47 million (100 million Saudi Riyals), and sending aid to Syria (E.I.U.S., 1973, No. 4). A Saudi Royal Proclamation issued in conjunction with the sending of troops said: "Saudi Arab blood must be mixed with other Arab blood for the sake of the occuppied lands and the holy places. Saudi Arabia is putting all her resources at the services of the battle " (E.I.U.S., 1973, No. 4).

Sixth was the drastic price hike in the unit price of oil. The price of the marker crude, 34° API Saudi Arabian Light, went from $3.011 per barrel on October 1, 1973, to $11.651 per barrel on January 1, 1974,

-- an increase of 387% (E.I.U.S., 1974, No. 1).[5] Table 1 summarizes the price changes. In conjunction with the price hike the government take

TABLE 1

BARREL PRICE OF THE MARKER CRUDE, SAUDI ARABIAN LIGHT (34° API), FOR THE PERIOD 1971 TO 1983.

| Date | Barrel price | Government take | Government take in percent (%) |
|---|---|---|---|
| February 1971 | 2.180 | NA | NA |
| January 1972 | 2.479 | 1.448 | 58% |
| January 1973 | 2.591 | 1.516 | 58% |
| October 1, 1973 | 3.011 | 1.770 | 59% |
| October 16, 1973 | 5.119 | 3.048 | 59% |
| January 1, 1974 | 11.651 | 7.008 | 60% |
| November 1974 | 11.251 | 9.816 | 87% |
| October 1975 | 12.376 | NA | NA |
| January 1976 | 12.376 | NA | NA |
| January 1977 | 13.000 | NA | NA |
| February 1978 | 13.660 | NA | NA |
| December 1978 | 12.700 | NA | NA |
| January 1979 | 13.300 | NA | NA |
| May 1979 | 14.500 | NA | NA |
| June 1979 | 18.000 | NA | NA |
| November 1979 | 24.000 | NA | NA |
| June 1980 | 30.000 | NA | NA |
| October 1981 | 34.000 | NA | NA |
| January 1982 | 34.000 | NA | NA |
| March 1983 | 29.000 | NA | NA |

Note: All prices in U.S. $.
Note: NA - data not available.
Source: E.I.U.S. (various years).

increased from 59% to 87%. The major reason that the producers could enforce their drastic price hike was the inelastic demand for oil at that time (El Mallakh, 1982, 48). The first two factors mentioned contributed to the demand inelasticity.

Seventh was the inability of the western world to cope with the shift in "oil power." They had no stockpiles, nor the ability to bring economic and political sanctions against the oil producers. In addition, political pressure by the western oil companies within the

consuming countries prevented the respective governments from asserting control over the situation. There are many who believe the oil companies could have forced down the oil price, but for reasons of profit did not want to. The only resort was to use military force which was seen as dangerous and impractical since it would incur world condemnation and destabilize world order.

The new arrangement of the world oil economy has remained ever since, and Saudi Arabia has had an annual income that permitted it to develop and integrate itself in the world economy. Table 2 depicts Saudi Arabia's annual oil income.

TABLE 2

ANNUAL OIL REVENUES FOR SAUDI ARABIA FOR THE PERIOD 1968 TO 1982.

| Reveune by source in millions of U.S. $. | | | | | Total annual [b] income |
|---|---|---|---|---|---|
| Year | ARAMCO | GETTY | AOC | Others[a] | |
| 1968 | 872.0 | 13.6 | 34.3 | 6.9 | 926.8 |
| 1969 | 895.2 | 15.2 | 37.1 | 1.5 | 949.0 |
| 1970 | 1,088.4 | 17.2 | 40.3 | 3.8 | 1,149.7 |
| 1971 | 1,806.4 | 20.6 | 44.2 | 13.7 | 1,944.9 |
| 1972 | 2,677.9 | 28.0 | 68.7 | 4.7 | 2,779.3 |
| 1973 | 4,215.5 | 22.0 | 91.4 | 31.7 | 4,340.0 |
| 1974 | 22,375.0 | 53.3 | 113.6 | 31.6 | 22,573.5 |
| 1975 | 24,838.6 | 191.1 | 642.7 | 3.8 | 25,676.0 |
| 1976 | 29,937.3 | 247.6 | 559.2 | 3.3 | 30,747.5 |
| 1977 | 35,704.0 | 263.4 | 571.6 | 1.2 | 42,384.0 |
| 1978 | 31,609.0 | 286.6 | 338.2 | 0.0 | 32,233.8 |
| 1979 | 47,590.1 | 277.8 | 575.2 | 0.0 | 48,443.1 |
| 1980 | NA | NA | NA | 0.0 | NA |
| 1981 | NA | NA | NA | 0.0 | 113,200.0 |
| 1982 | NA | NA | NA | 0.0 | 75,800.0 |

a - Others include early Petromin operations and concession payments from TENNECO, AUXERAP, SUNOCO, Natomas, Dellingham Arabian Oil, Sante Fe International, T.A. Arabian Exploration, and Pakistan Gas Development Company.
b - Total figures may not tally due to rounding.
Note: NA - data not available.

Source: E.I.U.S. (various years) and El Mallakh, 1982, 63.

## Concept Of Downstreaming

Downstreaming is the taking of capital earned from one component of the economy and using it to enhance other sectors. The results on the economy are referred to as the downstream effects. In relation to Saudi Arabia the more specific term petrodollar downstreaming has been applied based on the source of the capital. Since the revenues generated are based entirely on the sale of petroleum and its by-products and all transactions are conducted in U.S. dollars, the revenue capital is known as petrodollars. The infusion of the aforesaid capital into the economy to bring about economic development is referred to as petrodollar downstreaming. The development of the Saudi shipping fleet is an example of petrodollar downstreaming.

Downstreaming can occur partially or totally depending on the governing regime, the resource's earnings, and the potential longevity of it. In the case of Saudi Arabia total downstreaming is in the process of occurring due to a benign government, annual earnings in the billions, and the promise of a century more of the same.

Downstreaming can occur in two forms: formal and subtle. Formal downstreaming is a deliberate decision by the resource industry and the government to commit earnings to public projects and private enterprises. These projects and enterprises may or may not be related to the original resource operations. Usually the government projects will be non-related in such areas as defense, social programs, and infrastructural construction. The resource industry enterprises will be in related areas such as refineries, petrochemical complexes, and other mineral exploration and extraction operations.

Subtle downstreaming occurs when other sectors of the economy develop and grow in response to formal downstream development. Even when there is no formal commitment or planned outlay of capital, out of necessity and derived demand the industry or sector develops. The entire development of the Saudi shipping fleet until recently has been the result of subtle downstreaming. Only in late 1979, when the government invested a 25% stake in NSCSA, did formal downstream development in shipping actually occur (NSCSA, 1982, 3).[6] The shipping industry is nearly all privately owned and operated, and there is a high percentage of foreign, but not controlling, ownership of Saudi shipping companies. It may be said that no one in Saudi Arabia considered ships to be essential, at least at first, but as downstream development created profitable new opportunities in shipping, enterprising Saudis and foreigners began to acquire their own fleets. Consequently, the growth of the Saudi fleet has been fortuitous.

Arab Culture And Commerce

To understand the Arab mind involves a study far beyond the scope of this thesis. However, a few brief notes pertaining to the Arab culture and how it dictates business and commercial activities are in order.

In Saudi Arabia all facets of life are governed by the Islamic religion. There is no separation of state and church. The Quoran is believed to be the literal word of God (Allah) spoken through Muhammed. In Saudi Arabia the strict Wahhabi orthodox form of Islam which is one of the more conservative views of the Quoran called Sunnite Hanbali is practiced (Moliver & Abbondante, 1980, 10). Saudi Arabia is the strictest Muslim society in the Middle East (Moliver & Abbondante, 1980, 10). There is no distinction between religious and temporal law. There

is only one law known as Sharia law whose code when translated means "path of God" (Moliver & Abbondante, 1980, 10).

The overall framework within which the typical Saudi views life is summarized in the phrase in sha Allah (the will of God). The Saudi Arabs believe that everything that happens on Earth occurs because God so intended it to and mankind is restricted solely to reacting to the event (Moliver & Abbondante, 1980, 14). Saudi Arabia is a country explicitly dedicated to promoting a particular religion and religious way of life as the means of happiness of every individual citizen (Crane, 1978, 37--38). Consequently, the formulation of plans and development are predicated on religious values. In the Kingdom's Second Five-Year Plan (1975--1980) the government listed four national purposes as priorities in development. In descending order of importance they are: spiritual well-being (35%); national survival (30%); material well-being (25%); and, national prestige (10%) (Crane, 1978, 39). Each following purpose is dependent on its predecessor. The four national purposes are subdivided into objectives, subobjectives, and courses of action (Crane, 1978, 47--55). Table 3 depicts the heirarchial structure of the first three categories.

As is apparent from Table 3 some important economic concepts that would have a direct bearing on shipping developments are included. Most notable are the goals of free enterprise, foreign culture control, economic independence, internal stability, economic growth of the nation (GDP), distribution of wealth to individuals, and economic strength. Religious education is the most important goal under the first purpose of spiritual well-being, for when one receives a religious education, he knows how to perform and achieve the other goals and purposes. This

TABLE 3

PURPOSES, GOALS, AND OBJECTIVES AND THEIR PRIORITY
AS DEFINED BY PERCENT.

| PURPOSES | GOALS | OBJECTIVES |
|---|---|---|
| SPIRITUAL WELL-BEING (35.0%) | Religious Education (10.5%) | Quantity Increase |
| | | Quality Increase |
| | Free Enterprise (8.75%) | Individual Incentives |
| | | Private Enterprise |
| | Institution Promotion (8.75%) | HAJJ |
| | | Bedouin Protection |
| | Foreign Culture Control (7.0%) | Harness Foreign Manpower |
| | | Human Resources Development |
| NATIONAL SURVIVAL (30.0%) | Military Defense (15.0%) | Saudi Armed Forces |
| | | Political Alliances |
| | Economic Independence (9.0%) | Growth in GDP |
| | | Self-Sufficiency |
| | Internal Stability (4.5%) | Spiritual Well-Being |
| | | Distribution of Wealth |
| | Human Resource Development (1.5%) | Managerial Development |
| | | Research Expertise |
| MATERIAL WELL-BEING (25.0%) | Economic Growth Of Nation (GDP) (12.5%) | Free Enterprise |
| | | Resource Maximization |
| | Distribution Of Wealth To Individuals (10.0%) | Social Services |
| | | Individual Incomes |
| | Surplus Reserve Investment Abroad (2.5%) | Maintain Oil Reserve/Production Ratio |
| | | Maintain Global Investment Climate |
| SPIRITUAL WELL-BEING (10.0%) | Economic Strength (4.0%) | GDP Growth |
| | | Investments And Recycling Abroad |
| | Religious Strength (3.0%) | HAJJ |
| | | Islamic University |
| | Military Strength (3.0%) | Political Alliances |
| | | Saudi Armed Forces |
| 100.0% | 100.0% | |

Note: HAJJ is the Mecca pilgrimage. In this table it refers to the Saudi government's contribution of money in the form of socio-religious welfare to the poor who cannot afford the pilgrimage otherwise.

Source: Crane, 1978, 40.

leads to the Muslim requirement of maximum participation and individual initiative in all societal undertakings including economic development (Crane, 1978, 39). Another example is the desire to restrict influences by foreigners thereby protecting the "Saudi ways" (Crane, 1978, 39). The underlying theme these two examples support is the preservation of a unique culture predicated on a religion which recognizes, utilizes, and incorporates economic, social, and political concepts to foster its perpetuity.

## Concept Of National Shipping Fleets

The term national shipping fleet as used here refers to those ships that are registered in Saudi Arabia, fly the Saudi flag, and have Saudi

homeports such as Jiddah, Dammam, and Yanbu. The word national does not mean that the ships and shipping companies are state owned or controlled, though they may be. The term means that the fleet is Saudi controlled because of domination of Saudi ownership, though foreigners may have part ownership. Quite often a country may have a larger shipping fleet than would be presumed based on the official registry records since there may be outside-registered flag-of-convenience ships and foreign investments. In Saudi Arabia's case the former does not appear to exist and involvement in the latter is negligible. However, as will be observed later, the Saudi flag is to a certain degree a flag-of-convenience for foreign shipping companies. There is a great deal of foreign investment in Saudi shipping companies. This thesis will be limited to the Saudi flag companies with minor mention of Saudi interests in shipping abroad.

## II. SHIPPING IN SAUDI ARABIA BEFORE 1974

### Factors Suppressing Early Shipping Development

The relatively short span of existence of the Kingdom of Saudi Arabia coupled with the simplicity of the people's lifestyle, low demand for goods, services, and luxury items precluded the development of any significant shipping fleet and glorious maritime heritage. Though the Arab culture as a whole may make claim to significant periods of flourishing maritime activity which had an impact on the world and left its mark in history, the Saudis have no share in that history.

The unification of the multiple sheikdoms and nomadic tribes of the Arabian Peninsula by Abd al Aziz ibn Abd al Rahman al Saud in 1932 creating present-day Saudi Arabia (Moliver & Abbondante, 1980, 1) occurred in a depressed period of the Arab world. Oil had yet to be found in Saudi Arabia and the importance of Middle East oil elsewhere had yet to make an imprint on the world economy.[7] Arab culture and its Islamic religion, in conjunction with a physical geography that made the region a rather inhospitable place kept the Saudis out of the mainstream of world society.[8]

Aside from the role the ancestors of present-day Saudis, residing in coastal sheikdoms, may have had in shipping during the Middle Ages when the Arabs dominated Persian Gulf and Indian Ocean trade (Issawi, 1982, 45), the first hard evidence indicating involvement of the Saudis in shipping is the Arab dhow trade of the late nineteenth and early twentieth centuries.

### History Of The Arab Dhow

In the middle decades of the nineteenth century the two major money-making trades for the Arab dhow were the export of slaves and

illegal ivory from East Africa (Martin & Martin, 1978, 25). Black slaves and ivory were much sought after by the Arabs themselves, Europeans, Persians, and the people of South Asia. The Arab dhows would sail to ports such as Zanzibar and Lamu and Kilwa in Kenya to pick up their cargoes and ship them back to Arabia. There the slaves and ivory were either sold for local use, in Arabia, or reexported to Europe, Persia, and South Asia. Ports such as Doha in Qatar, Aden in Yemen, and Bahrain Island became trade centers and crossroads of commerce. How big a role the coastal forefathers of the Saudis had in these trades is not known.

Beginning in the late nineteenth century slavery and the ivory trade declined drastically and pearl fishing emerged as the predominant source of wealth for the ports on the Persian Gulf (Martin & Martin, 1978, 166).[9] The Bahrainian seas and adjacent Saudi and Qatari waters were the richest areas in the world at that time. Bahrain became the pearl commodity center of the world. From there pearls were exported to Europe, Persia, East Africa, and South Asia. Throughout the lifetime of the Arab pearl trade India was the major importer.

Approximately 2,800 vessels were engaged in pearl fishing and trade in the late nineteenth century. Table 4 depicts the nationality of the

TABLE 4

BREAKDOWN OF PERSIAN GULF PEARL FISHING AND TRADING FLEET BY COUNTRY, NUMBER, AND PERCENT.

| Country | Number | Percent (%) share |
|---|---|---|
| Bahrain | 900 | 32.14% |
| U.A.E. | 700 | 25.00% |
| Kuwait | 600 | 21.44% |
| Saudi Arabia | 200 | 7.14% |
| Qatar | 200 | 7.14% |
| Iran (Persia) | 200 | 7.14% |
| TOTAL | 2,800 | 100.00% |

Source: Martin & Martin, 1978, 167--168.

pearl fleet. The Saudi share of the pearl fleet is only 7.14%. The Saudi pearl fleet was based at Jubail and Tarut (ARAMCO, 1980, 241). During the period 1830 to 1899 the Persian Gulf pearl industry averaged annual earnings of $1.75 million (Martin & Martin, 1978, 167). Assuming the quantity and quality of catch by all vessels to be relatively equal in a year a crude estimation of the percentage share of the annual income for the Saudi fleet of $124,950 can be derived.[10]

In the first decade of the twentieth century the total annual income rose to $7 million (Martin & Martin, 1978, 167), and the Saudi share rose to $499,800 per year. The pearl industry lasted until the late 1920s. Decline set in rapidly with the advent of the cultured pearl, the artificial pearl, and the ensuing world depression of the 1930s.[11] In 1926 the industry earned $3 million (Martin & Martin, 1978, 168); the Saudi share was estimated to be $214,200. By 1946 the total number of boats engaged in pearl fishing had declined to 530 (Martin & Martin, 1978, 168) of which perhaps 38 were Saudi. In 1970 there were less than 100 boats (Martin & Martin, 1978, 168) engaged in pearl fishing of which only 7 were Saudi.

Though pearl fishing and trading dominated the Arab dhow trade in terms of money-making, there were other trades on which a livelihood could be made. The most prominent one in terms of regularity was the two-way trade in dried fish and mangrove poles with East Africa. Dried fish, caught in the Red Sea, Persian Gulf, and northwest Indian Ocean was exported to East Africa where it was a sought after staple food. In exchange, mangrove poles which were used in construction and housing were exported to Arabia (Martin & Martin, 1978, 103). Table 5 gives the number of Arab dhows engaged in this trade calling at the port of Dar es

TABLE 5

NUMBER OF ARAB DHOWS ENGAGED IN THE DRIED FISH/MANGROVE POLE TRADE WITH DAR ES SALAAM, TANGANYIKA FOR SELECT YEARS OF THE TWENTIETH CENTURY.

| Year | Number |
|---|---|
| 1921 | 98 |
| 1925 | 24 |
| 1930 | 53 |
| 1935 | 146 |
| 1939 | 175 |
| 1945 | 151 |
| 1948 | 31 |
| Source: Martin & Martin, 1978, 103. | |

Salaam, Tanganyika for various years.[12] What percent of the total is Saudi is not known. However, as one can see, beginning with the latter half of this century the dried fish/mangrove pole trade declined severely.

Another profitable two-way trade for the Arab dhows was the transport of certain mixed cargoes between Arabia and Zanzibar. Imports to Zanzibar from Arabia included dried fish, dates, wheat, cloth, spices, and luxury items (Martin & Martin, 1978, 132). Exports to Arabia included cloves, coconuts, seashells, fruit, and rope (Martin & Martin, 1978, 134--135). Table 6 depicts the number of Arabian dhows engaged in this two-way trade with Zanzibar for select years. What percent is Saudi is unknown.

Role Of The Arab Dhow Today

The number of Saudi dhows in existence today is unknown. However, they are still being built. In 1971 large dhows were being built in Bahrain and Kuwait for the Saudis, and used for cargo transport (Martin & Martin, 1978, 163, 171). The smaller dhows were used as fishing vessels (Martin & Martin, 1978, 171). The average dhow in 1971 was 120 tons

TABLE 6

NUMBER OF ARAB DHOWS ENGAGED IN THE MIXED COMMODITIES TWO-WAY TRADE WITH ZANZIBAR FOR THE PERIOD 1907 TO 1975.

| Year | Number | Year | Number |
|---|---|---|---|
| 1907 | 108 | 1947 | 392 |
| 1909 | 208 | 1948 | 474 |
| 1911 | 173 | 1950 | 385 |
| 1914 | 81 | 1953 | 530 |
| 1919 | 160 | 1955 | 308 |
| 1924 | 128 | 1959 | 193 |
| 1929 | 104 | 1962 | 106 |
| 1934 | 178 | 1968 | 0 |
| 1938 | 259 | 1970 | 1 |
| 1941 | 334 | 1971 | 0 |
| 1942 | 443 | 1974 | 1 |
| 1944 | 518 | 1975 | 0 |
| 1946 | 577 | | |

Source: Martin & Martin, 1978, 133

with a crew of fourteen, and typical construction costs were $305 per 1½ feet of length excluding engine (Martin & Martin, 1978, 171).

The Saudi dhows today are entrepot traders. They will carry anything if the price is right, and until 1962 when it was finally outlawed they were still engaged in the slave trade. Saudi and Yemeni Arabs utilized slaves and imported them from Ethiopia (Martin & Martin, 1978, 221). The price of attractive females was about $2,000 in Saudi Arabia. Since 1973 a highly lucrative trade has been the importation of illegal aliens from Pakistan, India, and Iran to Saudi Arabia via Qatar and Kuwait (Martin & Martin, 1978, 224). These are poor people who have heard of Saudi Arabia's prosperity and come in search of it. Another highly lucrative trade is the importation of narcotics from Iran and Pakistan to Saudi Arabia (Martin & Martin, 1978, 224). Opium, hashish, and other hard drugs, for those willing to take the risk, yield high profits.

On the export side, the shipment of luxury items such as radios, stereos, watches, electrical appliances, and cars to Iran from Saudi Arabia, Kuwait, and Dubai is popular (Martin & Martin, 1978, 224). The illegality of this trade stems from the circumvention of Iran's high import taxes since the dhows land their cargoes without customs clearance. In Iran these goods are very expensive because of the high import taxes that have been imposed as a means to generate revenue, restrict their influx, and attempt to preserve culture (limit western decadence). The differential in cost between the high price of the goods in Iran and the low price of them in Arab states is such that as long as the dhow trader sells them at a price somewhere inbetween he makes a fair profit.

On the more mundane and legal side, small stone chippings for construction purposes are imported to Saudi Arabia from Iran (Martin & Martin, 1978, 199), and dried fish is imported from Qatar, Dubai, and Abu Dhabi. In 1973 23 Saudi dhows were engaged in this trade with Qatar (Martin & Martin, 1978, 176).

Trade with East Africa has declined drastically but still goes on. Major products imported include ghee, sorghum, cottonseed oil, wheat, flour, tea, coffee, and coconut oil (Martin & Martin, 1978, 66--67). Table 6 depicts the decline of recent years. Figure 1 shows the Arab dhow trade routes.

Arab dhows had an important role in Saudi culture. Even the nomadic tribes of the interior, who may never had seen the ocean, benefitted from the dhows. The future of the dhow in the long-term is questionable since the effect of technology on this aspect of the "old Saudi ways" is yet unclear. In the short-term the Arab dhow still has a place in Saudi Arabia and will exist into the early twentyfirst century.

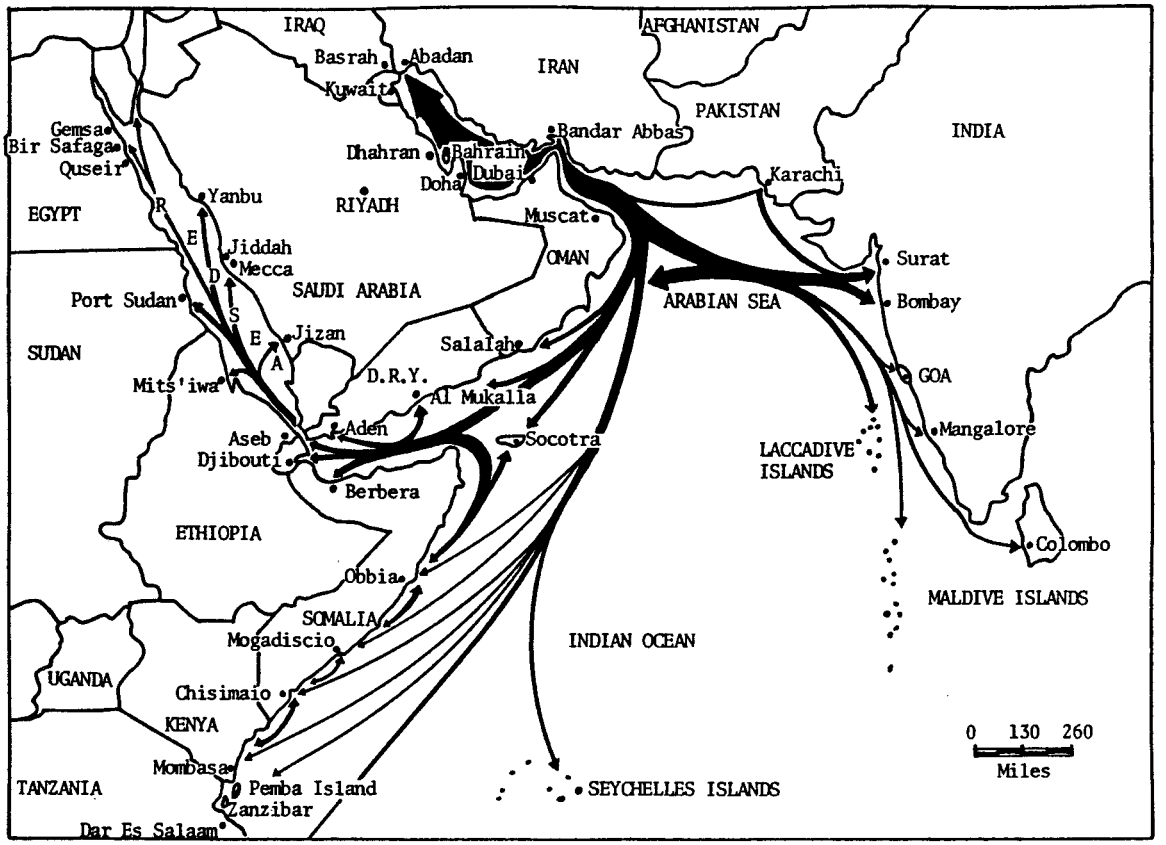



FIGURE 1. TRADE ROUTES OF THE SAUDI DHOW FOR THE PERIOD 1830 TO 1977.

The reasons for the dhow's success are as follows:

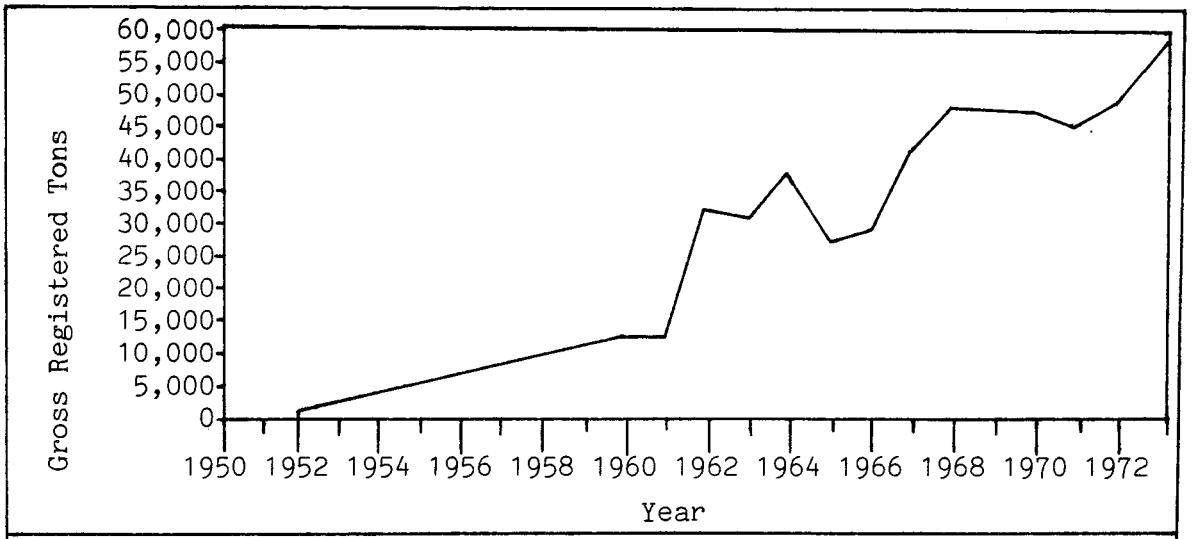
1. Dhows can easily respond to modernization, such as installation of engines.
2. Dhows can enter creeks and shallow harbors which modern ships cannot.
3. Ships require better ports (facilities and equipment).
4. At smaller ports there may be insufficient loads for ships, making it unprofitable for them to call, but dhows which are smaller can do so economically.
5. Dhows are ready or can be ready at a moment's notice while a ship may not be, and if perishable produce is the cargo it needs transport immediately.

6. Dhows are cheaper to operate because of simple design, construction, and equipment (Martin & Martin, 1978, 225).

Birth Of The Modern Fleet

While this chapter so far has focussed on dhows it should not be construed that Saudi Arabia did not have vessels of other forms and construction. These vessels would be classified as modern by western standards since they were designed in the twentieth century. The first modern vessel recorded in the world shipping statistics was acquired in 1952 (U.S.D.C., 1961, 3).

The growth of the modern Saudi fleet prior to the 1973/74 oil crisis was both slow and, in terms of magnitude, insignificant. As Figure 2 illustrates (Based on Appendix A, Tables 16 and 17) the Saudi merchant fleet grew from 1,500 g.r.t. in 1952 to 58,530 g.r.t. in 1973.




Source: U.S.D.C. (various years) and Lloyd's Register of Shipping (various years).

FIGURE 2. RISE OF THE MODERN SAUDI MERCHANT FLEET FOR THE PERIOD 1952 TO 1973.

The percentage increase for the entire twentytwo year span was 3,902% while in the period 1974 to 1983 the increase was nearly 7,350%.

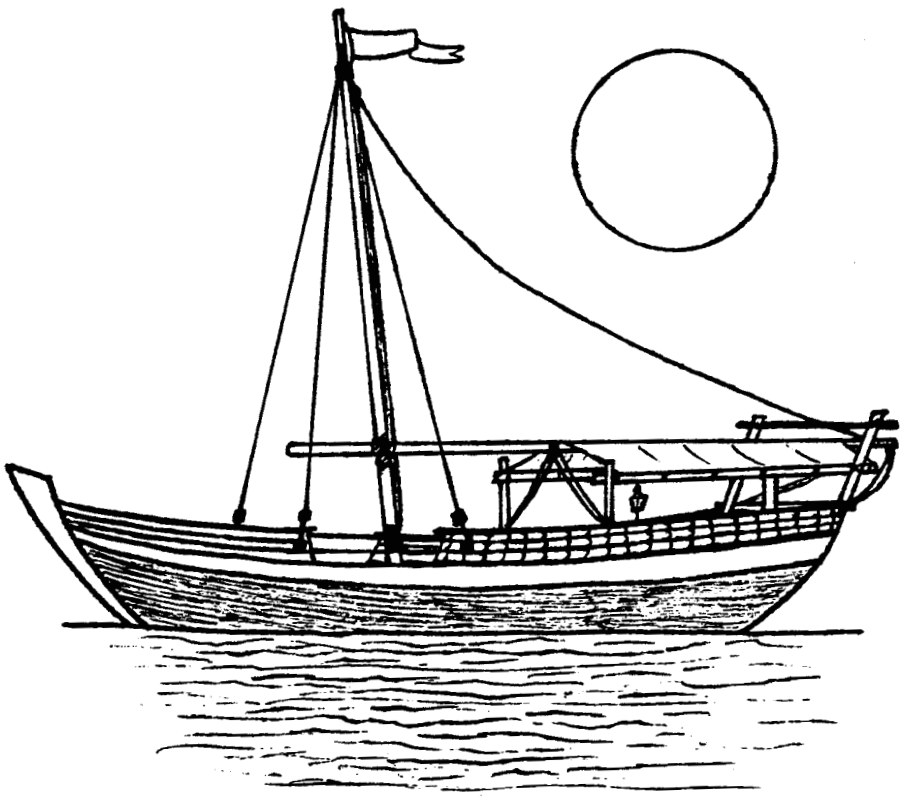
Four basic vessel types constituted the Saudi fleet through the period. The most popular was the break-bulk freighter (Appendix A, Tables 16 and 18). It accounted for the largest number of vessels and of g.r.t. for all twentytwo years. The least popular was the tanker which, considering Saudi Arabia's position as a major oil exporter, is puzzling. Throughout most of the period Saudi Arabia had none. Only in the years 1962 through 1964 did the country have one, of some 13,000 d.w.t. (Appendix A, Table 16) and in 1971 through 1973 they had two totalling nearly 28,000 d.w.t. (Appendix A, Table 18, column A). The other two vessel types were the bulk carrier and the combination passenger/cargo ship (Appendix A, Tables 16 and 18).

The 1973 Saudi fleet of 58,530 g.r.t. was infinitesimal compared to the world shipping fleet which then totalled more than 289.9 million g.r.t. (Appendix A, Table 17, column E). The Saudi fleet accounted for 0.02% of the world total and ranked 74th in the world (Appendix A, Table 17, columns H and J).

Since this thesis mostly concerns the period after the oil crisis of 1973/74 the pre-1974 fleet can be assumed to have been virtually non-existent, and the fleet of the eighties developed from scratch beginning in 1974.

Subsequent to the decline of Arab domination of Persian Gulf and Indian Ocean commerce in the Middle Ages, up till the twentieth century, Saudi Arabia's deep-sea foreign export trade has been consecutively handled by the Persians, Portuguese, Dutch, and British (Issawi, 1982, 45).[13] From the opening of the Suez Canal and continuing into the twentieth century no particular shipping nationality dominated.[14] With the commencement of oil production and export roughly 43% of the tankers

had the nationality of the oil companies they worked for or a flag-of-convenience nationality deemed more desirable for economic reasons. The rest was contracted out to independent operators.



## III. FACTORS FOR DEVELOPMENT OF THE FLEET

### Synopsis Of The Factors

Four basic factors have governed the development of Saudi Arabia's shipping fleet: economic growth, government policy, culture, and geography. The first two may be classified as primary and the latter two secondary. Growth of other sectors of the economy, by far, has been the most influential and dictated nearly all development. Government policy has not played the significant role expected. The religious doctrine of the Arab culture provided the underlying framework through which the first two factors were subtlely guided. Geography, by its physical, spatial nature, is the basis for the existence of any maritime activity at all. The primary factors are direct in their application while the secondary ones are indirect.

### Geography

The spatial arrangement of continents and countries, with large expanses of water between many of them, predetermines the need for trading vessels. Saudi Arabia dominates a peninsula (Figure 3) with an extensive 1,800 km western coastline and a 500 km eastern coastline. These border generally calm seas, and possess suitable sites for ports. Neither the Red Sea nor the Persian Gulf are subject to the difficult navigational conditions that may exist on the high seas. Saudi Arabia is bordered to the south by the Y.A.R., D.R.Y., and Oman which are unstable and have not been on the best of terms. The border crosses mountainous, desolate, and inhospitable territory and is ill defined.[15]

Only the northern border of Saudi Arabia adjoins the Asian continent. Here too the terrain is rugged and across the frontier lie a tier of states, Iraq, Jordan, Israel, and the controversial Sinai Peninsula,

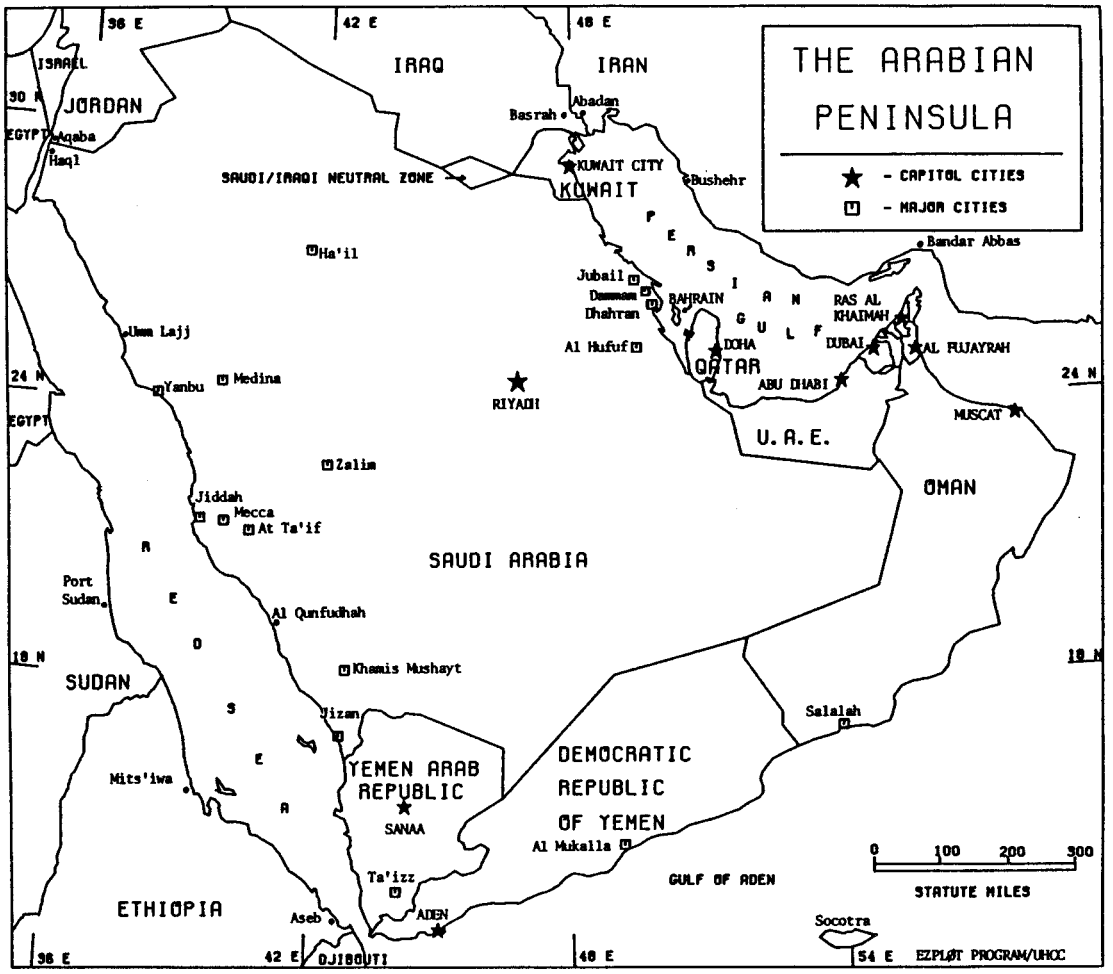



FIGURE 3. THE GEOGRAPHY OF SAUDI ARABIA.

which Saudi Arabia views with either suspicion or open hostility.[16] The adjacent hinterland does not have much to offer either in the way of goods to exchange.[17]

Since oil is fluid the best way to transport it and its by-products is by ship or pipeline. However, the latter is confined to land, mostly domestic or minor adjacent state transport, and eventually its cargoes must go by ship to reach destinations in Europe, North America, and Japan.[18] Since Saudi Arabia lacks most other raw materials and the sources of them are distant, the need for imports creates a demand for ships.

Islam And Arab Culture

The connection between Islam and economics and policy is perhaps best understood and demonstrated if one recognizes that the Muslim religion is not evangelical but focusses its efforts almost entirely on the happiness of its own adherents (Crane, 1978, 64). Equating the four national purposes (refer Table 3 on page 13) with happiness derives the goals and objectives listed in Table 3. The goals of interest are free enterprise, foreign culture control, economic independence, internal stability, human resource development, economic growth of nation (GDP), distribution of wealth to individuals, surplus reserve investment abroad, and economic strength. For each of these goals there are pertinent subcategories of objectives and subobjectives which when achieved will lead to heirarchial fulfillment of the matrix and therefore happiness.

For the purposes of illustrating the point that religion affects economic and policy considerations in Saudi Arabia some examples are offered. The goal of free enterprise has its two main objectives of

individual incentives and private ownership. For the goal itself an example connecting religion to free enterprise is stated in the First Five-Year Development Plan (1970--1975) as quoted by Crane (1978, 66): "The commitment of Saudi Arabia to a free economy derives from the teachings of the nation's religious code and long-standing social traditions." A more pointed reference is found in the Second Five-Year Development Plan (1975--1980) which states that the objective of individual incentives is to strengthen the responsiblity of the individual as a basic Islamic moral principle (Crane, 1978, 67). In the case of the objective of private ownership it is observed that respect for private property is deeply ingrained in Islamic law and that owning and managing property, whether productive or not, is an important road to happiness in the Muslim religious teachings (Crane, 1978, 69).

The best evidence of my contention that Islam and Arab culture has influenced the course of Saudi shipping development lies in comparing the religion-based concepts with generally recognized wholly economic and political principles that have governed fleet developments of secular states. In doing so one sees immediate corellation but that the Saudi culture adds influence by injection of more elements. Table 7 lists the strictly economic and political grounds for shipping fleet development. When the two philosophies are combined a comprehensive list of the specific indirect religious and direct economic and political factors responsible for development of the Saudi shipping fleet is derived. Table 8 lists them, denotes their sources, and relates them to Saudi shipping development.

The preceding discussion shows that Islam and Arab culture indirectly mold economic development and policy-making. There are specific

TABLE 7

AUTARCHIC POLICIES AND CRITERIA INFLUENCING NATIONAL SHIPPING DEVELOPMENT IN GENERAL.

| | |
|---|---|
| 1) | Control over trade and communications: this is a principle reason for development of any strong national fleet. |
| 2) | Less reliance on foreign shipping companies: a corollary of the above -- to reduce the dependence on foreign ships and to transport an increasing proportion of external trade in nationally controlled tonnage. The ultimate objective is to attain at least the UNCTAD 40:40:20 proposals on cargo trade. |
| 3) | Balance of payments: improve the trade balance either decreasing expenditures on foreign tonnage or earn foreign exchange by using national ships in the cross trades. |
| 4) | Diversification of trading partners: idea is to decrease the influence of individual country markets on a national economy and to facilitate the growth of new external trade outlets. |
| 5) | Economic and industrial integration: shipping is an integral part of economic development and vital to carrying on trade. It also has a positive effect on stimulating the growth of related marine industries such as shipbuilding, ship repair, chandleries, and port facilities. |
| 6) | Influence in freight conferences: freight rates set by liner conferences have often been viewed as excessive. By placing a national fleet in the shipping conferences serving the country a greater say in the freight rates is obtained. |
| 7) | National prestige: this is almost impossible to quantify although the establishment of a national merchant fleet can be seen as a symbol of the country's independence and maturity. |
| 8) | National security: considered important in times of hostilities when the country's defences can be maintained by its own transportation system. |
| 9) | Well formulated policy: a coherent plan for development is vital and the establishment of a maritime code is essential. |
| 10) | Cargo: it must exist if a viable fleet is to be had. If there is insufficient national trade then the level of cargo moving between other nations must be large enough to warrant cross trade operations. |
| 11) | Manpower: competent crews and management comprehending their functions are mandatory. |
| 12) | Capital: shipping operations require large sums of money which must either come from government reserves, joint ventures, banks (both domestic and international), equity investments, or public offerings of stock. |
| 13) | Ships: a well-balanced fleet of modern vessels suitable for their intended trades that are well-maintained to fully realize their potential. |
| Source: | The first eight are derived from Drewry Shipping Consultants Ltd., 1982. The last five come from Krem, 1980. The author has done some interpretation. |

outright instances where religion has directly determined fleet development and shipping economics. One example of its influence on fleet development is the existence and growth of the livestock carrier fleet. The basis for the growth of this fleet is to import live animals for slaughter and consumption. The reason is the Islamic mandate that good

TABLE 8

AUTARCHIC AND ISLAMIC-INDUCED FACTORS GOVERNING SAUDI SHIPPING DEVELOPMENT.

1) Control commerce: there is both an autarchic and Islamic foundation for this philosophy. The economic one is self-explanatory. The Islamic bases are the belief in free enterprise and the desire for economic strength and internal stability. Petromin Tankers, UASC, and NSCSA are examples of implementation of this dual derivative philosophy. (Source: Drewry Shipping Consultants Ltd., 1982 and Crane, 1978, 40)

2) Independence from foreign shipping firms: this concept has both an autarchic and Islamic basis. The economic reason is to use nationally controlled tonnage for external trade. The Islamic aspects are the desire for economic independence and foreign culture control. Petromin Tankers, UASC, and NSCSA are all examples of implementation of this concept. (Source: Drewry Shipping Consultants Ltd., 1982 and Crane, 1978, 40)

3) Balance of payments: this idea has both an economic and Islamic basis. The economic one is to improve the trade balance. The Islamic reasons are to obtain internal stability and foster economic growth of the nation (GDP). Though the Saudis have acquired a considerable amount of tonnage it is not the effective improver it should be because both the manning and managing of the companies is left to foreigners and expatriates. Hence, there is a lot of capital leaving the country in the form of wages, repair bills, and operations costs. (Source: Drewry Shipping Consultants Ltd., 1982 and Crane, 1978, 40)

4) Diversification of trading partners: this notion includes both autarchic and Islamic ideals. The economic aspect is to decrease the influence of individual markets on the economy. The Islamic reasons are to implement foreign culture control and promote surplus investment abroad. Saudi Arabia is doing this but is finding out that it is limited to dealing with the western nations for the commodities the Kingdom wants. (Source: Drewry Shipping Consultants Ltd., 1982 and Crane, 1978, 40)

5) Economic and industrial integration: this concept embraces autarchic and Islamic principles. The autarchic aspect is to support economic development as a whole and stimulate associated sectors of the economy. The Islamic grounds are to foster economic growth of the nation (GDP) and promote human resource development. The proliferation of bunkering companies and the inception of JSRY demonstrate the validity of this concept. (Source: Drewry Shipping Consultants Ltd., 1982 and Crane, 1978, 40)

6) Influence in freight conferences: there is both an autarchic and Islamic basis for this desire. Placement of a fleet in the conference trades serving the country gives the Kingdom a say in the establishment of transport rates. The Islamic bases are the protection of free enterprise and maintenance of economic independence. The placement of UASC's and NSCSA's ships in the liner trades has aided Saudi Arabia in achieving this goal. (Source: Drewry Shipping Consultants Ltd., 1982 and Crane, 1978, 40)

7) Policy: there have been no direct Islamic bases for policy considerations. Rather, the innate nature of Islam has subtlely shaped policy and decision-making. Saudi Arabia has been inconsistent in its policies and hence policy has not served the role expected. (Source: Krem, 1980)

8) Cargo: cargo is solely an economic component of growth. The volume of cargo being imported and exported from Saudi Arabia warrants a shipping fleet of large tonnage. (Source: Krem, 1980)

9) Capital: money is only an economic means of facilitating the everyday business of life. Since Saudi Arabia has massive reserves and welcomes joint ventures it has no trouble obtaining capital. (Source: Krem, 1980)

10) Ships: the acquisition of ships is predicated on economic principles. Though Saudi Arabia started out slow it has matured and established a viable shipping fleet to be reckoned with. (Source: Krem, 1980)

Note: The citing of the sources above only pertains to the origin of the idea or concept. The presentation of the above factors with interpretation is solely the author's viewpoint.

Muslims should eat freshly slaughtered meat, not frozen (Mercer, 1982, 19). Since Saudi Arabs are the most conservative and stricter adherents of Islam, a strong demand for a livestock carrier fleet is derived. The carriage of live animals is not the most economical means of transporting meat but by reason of religious dogma it will be done (Mercer, 1982, 19).

A second example is the development of the passenger ship and ferry fleet. Until 1975 Saudi Arabia had none. In 1983 the country had ten vessels. The sole basis for acquiring this fleet is the continual Muslim pilgrimage to the holy cities. Mecca and Medina are the holy cities of Islam and it is stipulated that all Muslims who can afford to make the journey do so at least once in their lifetime. Since Saudi Arabia is the site of these cities the country has an obligation to facilitate the pilgrim's journey. Providing adequate transport from abroad is one of the ways. Therefore, passenger vessels have been acquired. This shipping enterprise is more profitable than the above one.

Though more symbolic in nature than possessing impetus actually fostering development, but nonetheless meaningful is the Quoran's reference to shipping.[19] The pertinent passage reads: "And His are the Ships Sailing smoothly through the seas, Lofty as mountains (Verse 24--Surah 55)" (NSCSA, 1982, 1). This verse provides inspiration implying that shipping is good, the ships will see safe voyages, and they are protected by Allah. If anything it justifies Arab shipping.

Policy Considerations

A coherent, well-formulated, and established shipping policy is non-existent in Saudi Arabia. That others share this view is

exemplified by the former foreign advisor to the Saudi Ports Authority who stated: "As to my knowledge there is not even an established shipping policy line as yet and only since very recently the Saudi government is considering the question as to whether the country should ratify the UN Code of Conduct for Liner Conferences" (Rathjen, 1983, p.c.). The Saudis believe they have formulated a coherent shipping program (Salman Al-Hashim, 1983, 9; Al-Turki, 1983, 23) though they do not elaborate; but when one reviews their legislation, decrees, development plans, and policies the evidence of interest and concern in shipping is minimal. There has been no aggressive expansionist policy in shipping (E.I.U.S., 1983, No. 2). This, of course, contrasts with that of many other Arab states which have developed and instituted strong shipping policies and are well on their way to attaining their respective shipping goals (Al-Turki, 1983, 23; Drewry Shipping Consultants Ltd., 1982). The majority of studies on Arab shipping are just that -- papers on Arab shipping development as a whole, presented collectively citing examples from whichever country supports the arguments being made and ignoring the differences.[20] Saudi shipping development differs from that of other Arab states. Most vessel tonnage in Saudi Arabia are privately owned as opposed to nearly all the other Arab countries where the state either totally owns or dominates the fleet (Seatrade Publications Ltd., 1982).[21]

Through 1983 there have been six methods through which the state attempted to foster shipping development. Nearly all are economic oriented: the bunker subsidy, the 51% ownership requirement, a liberal trade policy, participation in Pan-Arab shipping organizations, government ownership of shares, and reduced stevedoring charges. Contrasting with this, however, are negative aspects which if resolved would

contribute significantly to the emergence of an established shipping policy. They are: the lack of government action on the UNCCLC, no cargo reservation laws, no formal personnel training program, establishment of imported cargo minimums, and overly stringent customs regulations.

Bunker Subsidies

The most outstanding and perhaps sole promoter of the fleet has been the government-induced bunker subsidies (Normann, 1983, p.c.; Porter, 1983, p.c.; Rathjen, 1983, p.c.; Seatrade Publications Ltd., 1983, 129; E.I.U.S., 1983, No. 1). The bunker subsidies provided attractive incentives for local entrepreneurs to move into shipping (Seatrade Publications Ltd., 1982, 135) and promoted proliferation of bunker companies (Cockett & Hunt, 1982, 23) which demonstrates the validity of economic and industrial integration. Though the generous bunker subsidies of the last decade have been drastically curbed, the effect they had on Saudi tonnage growth was immense. During the past ten years Saudi vessels were able to purchase bunker fuels at discounts of up to 90% off the market price (E.I.U.S., 1983, No. 1). In 1981 to 1982 for example the price of heavy fuel oil to Saudi ships was 26 dollars per ton compared to the official market price of 177 dollars per ton (E.I.U.S., 1983, No. 1). The subsidy was only offered at Jiddah terminal through Petromin (the state organization) which subcontracted to twelve private companies (as of 1982) to sell and deliver to Saudi ships (Cockett & Hunt, 1982, 23). A VLCC could realize savings up to $20,000 per day because of the subsidy, and the advantages were even greater for inefficient vessels (E.I.U.S., 1983, No. 1).

The original reason for offering bunker subsidies was to aid coastal shipping only, predicated on the Jiddah refinery's surplus

production (E.I.U.S., 1983, No. 1). In December 1982 the bunker subsidy was eliminated because of Petromin's inability to continue providing the large amount of bunkers at such cheap prices (Seatrade Publications Ltd., 1983, 129) and abuse of the system. Widespread protest led to reinstatement of the bunker subsidy in February 1983 but with a built-in four stage phase-out plan leading to abolition on June 20, 1984, and tighter ship registration controls (E.I.U.S., 1983, No. 2). Table 9 defines the new scales of subsidies and eligibility requirements.

TABLE 9

BUNKER SUBSIDY SCALES AND ELIGIBILITY REQUIREMENTS DURING PHASE-OUT PERIOD.

| SUBSIDY PERCENT (%) | VESSELS/TRADES ELIGIBLE |
|---|---|
| 70% throughout entire period. | Red Sea trading vessels. |
| 70% reducing by 10% at each stage to final 40%. | Vessels carrying food or consumer goods. |
| 60% reducing by 20% at two stages to abolition on 6/20/84. | Tankers and other ships. |
| 90% throughout entire period. | Ships engaged in importation from foreign ports carrying full loads. |
| Note: This applies to Saudi vessels strictly. | |
| Source: E.I.U.S., 1983, No. 2, 30. | |

Tighter ship registration controls include strict documentation of proof of 51% Saudi ownership, that vessel is less than ten years old, and compliance with a variety of laws pertaining to national composition of the board, operating managers, shareholders, office locations, cargo origins and destinations, manifests, and voyage operations (E.I.U.S., 1983, No. 2).

Conclusive evidence of the importance of the bunker subsidy was summed up by Dr. Ghaith R. Pharaon, chairman of REDEC which owns at least sixteen ships flying the Saudi flag, when he lamented its

abolition: "(If) this decision is left to stand, I'm afraid the Saudi-owned shipping fleet will completely disappear. Our company will not have any interest in maintaining ownership of any vessels if these cannot be traded at least on a breakeven level" (E.I.U.S., 1983, No. 1).

Fiftyone Percent Saudi Ownership Requirement

The 51% Saudi ownership requirement of shipping companies came into force in early 1977 when the government initiated a ban on foreigners having controlling interest or ownership of commercial enterprises (E.I.U.S., 1977, No. 1). As a result of this regulation together with the belief that the state may institute cargo reservation laws, the anticipated growth of the Saudi national fleet, other economic incentives (to be discussed later), and the obvious benefit of bunker subsidies, a number of foreign shipping companies formed joint ventures with Saudi entrepreneurs and shifted tonnage to the Saudi flag. The shift in tonnage greatly increased the Saudi fleet figures. In addition to direct transference of registry, a number of foreign firms set up joint ventures to charter ships to the Saudi company. The concept was that when the Saudi company had developed economically and Saudi personnel had obtained expertise from "hands on" training, nationally-registered vessels would be acquired. At the same time the foreigners derived economic advantages in terms of trading and earnings with the country.

The 51% Saudi ownership requirement was indeed a promoter of fleet growth. It provided incentives to Saudi entrepreneurs to take up the business and induced foreign companies to enlarge their participation in the Saudi economy by contributing their ships. Also, it established some degree of control over trade and communication, obtained capital, and, because of the international constituency of investors, diversified

trading partners. Considering that Saudi Arabia was ill-prepared to operate a national fleet solely financed and manned by Saudis, these joint ventures were probably the best way to pursue development.

Liberal Trade Policy

The liberal trade policy of Saudi Arabia facilitates shipping by minimizing the detrimental, and sometimes deterring, effects of bureaucratic institutions such as the customs service, revenue agencies, quarantine boards, and port authorities. The processing of a ship (obtaining clearance) by these government bodies can be time consuming, produces paperwork, complicated, frustrating, and expensive, both in lost revenue-generating employment, port-incurred costs, demurrage, and processing charges. Saudi Arabia's list of banned items and products is short. Aside from alcohol, which is forbidden by religious law, and arms, which are considered threatening to stability, almost anything can enter the country (E.I.U.S., 1979, Supplement).[22] Therefore, customs clearances are easier since less time is needed to verify the legitimacy of the load. Secondly, the tariff law was revised in 1973 and 1974 and greatly reduces customs duties and instituted exemptions. The duty rate is a low 3%. The only exceptions where a higher rate of 20% is assessed are on imported goods that can be locally produced such as macaroni, confectionery, marble, cement, detergents, plastics, doors, windows, furniture, and water-heating appliances (E.I.U.S., 1979, Supplement). This, of course, is a protectionist tariff code but compared to elsewhere it is low. The low tariffs and exemptions promote trade, render smuggling and circumvention of duties senseless, minimize inspections, and expedite processing of paperwork, all of which make shipping operations more productive. Shipping is attracted to a country having such

policies. Lastly, there are no exchange controls, which invites capital, facilitates transactions, and eliminates monitoring organizations. In shipping where searching for finance, paying for services, and seeking economic incentives and havens are integral to the business, lax currency regulations are beneficial. Since Saudi Arabia has a stable currency and an ample supply of foreign exchange there is no need to control it (E.I.U.S., 1979, Supplement). The free flow of money entices shipping.

Though outwardly the liberal trade policy would appear enticing solely to foreigners it is equally so to the Saudi entrepreneurs who are new at the game and do not want more headaches than they have. Since Saudi ships must go through the same procedures as foreign ships relaxed trade policies support the national fleet too. The liberal trade policy induces capital to be available and helps generate cargo for the fleet.

Pan-Arab Shipping Organizations

Pan-Arab organizations are those agencies, joint ventures, and federations comprised of Arab states only for the purpose of collectively furthering their advancement and attainment of goals common to all members. Saudi Arabia is a member of the following: Islamic Shipowners Association (ISA); Arab Shipping Federation (ASF); Arab Maritime Transport Academy (AMTA); Arab Maritime Petroleum Transport Company (AMPTC); and, United Arab Shipping Company (UASC).

ISA is a newly conceived forum for the member Arab states to work together on mutual shipping problems. ASF is an Arab forum dealing in regional shipping problems. Of the twelve countries and thirty shipping companies represented, only three of the members are Saudi. AMTA was founded in 1972 as a Pan-Arab training facility for sea-going personnel.

Until recently it was situated in Alexandria, Egypt, but is now located in Sharjah, U.A.E.. In the period 1972 through 1977 over 6,000 candidates enrolled in the school; 2,000 graduated successfully and 2,150 passed limited components of the program. For the five-year period Saudi Arabia supplied only 162 cadets or less than 2.7% (Couper, 1980, 33). AMPTC and UASC are Pan-Arab joint state-owned shipping companies. AMPTC was founded by OAPEC in 1972 while UASC was formed by six Persian Gulf states in 1977. Both companies were formed for the purpose of allowing greater participation of Arab ships in their international trades. As will be noted later AMPTC has proven to be an embarassment both politically and economically while UASC has finally succeeded after a shaky start. The last two organizations in 1983 possessed 64 vessels, of which thirteen, or 20.3% are Saudi-registered (Seatrade Publications Ltd., 1983).

The two forum groups have had influence in freight conferences. AMTA has contributed to manpower requirements, and the two joint ventures have lessened reliance on foreign ships. Though AMPTC and UASC were supposed to improve the balance of payments and enhance national prestige, they have not done so. Only UASC in the last couple of years is changing that.

Government Ownership In Fleet

Government share of the Saudi fleet is very limited. Only three companies are wholly government owned: AMPTC, UASC, and Petromin Tankers. The combined g.r.t. of the state-owned vessels accounts for 8.25% of the Saudi fleet. AMPTC and UASC have already been discussed. Petromin Tankers arose from the organization's desire to have some control over petroleum exports and government-initiated formal

downstreaming. These companies are at best half-hearted attempts by the Kingdom to foster shipping growth. Much more decisive is its participation in NSCSA which has been designated the national carrier (Al-Turki, 1983, 23). NSCSA is one of the major wholly Saudi-owned shipping companies (NSCSA, 1982, 2). The government has a 25% interest, and the company must answer to it for its operation. NSCSA was expressly created in 1979 to serve the Kingdom's realization of "strategic need for such a fleet" (NSCSA, 1982, 4). NSCSA has had its vessels specifically designed, built the four largest RO/RO ships in the world, acquired an international staff with expertise, and decisive plans for the future.

Reduced Stevedoring Rates

The Saudi Ports Authority (SPA) in 1977 announced that stevedoring charges would be cut 50% at Jiddah, Saudi Arabia's major seaport (E.I.U.S., 1977, No. 4). This is an excellent example of direct government policy-making with a widespread economic effect. The drastic lowering of stevedoring charges forced a reduction in freight rates thus lowering the cost of goods and services to Saudi consumers. The often heavily inflated costs of goods and services by foreign shipping companies, sellers, and freight forwarders had become a sore point with the Saudis.[23] The excuse offered in lieu of the actual reason of high profit-taking was that Saudi Arabia's stevedoring charges drove the price to excess levels. Consequently, logic dictated that severe reduction of the stevedoring rates would commensurately lower prices for the goods and services. Thus the government had clear grounds with which to attack rate-hawkers.

The lowering of stevedoring rates was a clear-cut example of appropriate policy-making. The price-fixing foreign shipping companies could

no longer hide behind the pretext of high stevedoring rates as the reason for their high transport rates. The key being that foreign exporters had preferred foreign shipping companies since the high prices meant higher built-in profits and profit skimming for everybody. The removal of this incentive for utilizing foreign ships terminated the foreign shipping monopoly on Saudi import trade. It did not pay to favor foreign shipping companies anymore. Thus the Saudi ships obtained parity with their foreign counterparts in terms of employment opportunities.

Non-ratification Of The UNCCLC

Non-ratification of the United Nations Code of Conduct for Liner Conferences (UNCCLC) by Saudi Arabia prevents their vessels engaged in the liner trades from being protected from their foreign competitors. While other Arab states and the ASF worked hard at bringing about the UNCCLC, Saudi Arabia balked at accepting it (Salman Al-Hashim, 1983, 11). Though the existence of liner conferences irks the Saudis they must accept them as a fact of life and instead attempt to curb the undesirable aspects. Ratification of the UNCCLC appears advisable. Secondly, the Saudis should realize that to a degree their non-acceptance of the concept of liner conferences is hypocritical in light of the cartel-like actions of OPEC and OAPEC. The main arguments for Saudi Arabia to accede to the UNCCLC is that the liner trade is highly complex and dominated by fleets of nations long in existence (and with a considerable headstart). The Saudi liner fleet is small and its Saudi management has limited expertise (Al-Turki, 1983, 21).

Lacking Cargo Reservation Laws

Failure to adopt a cargo reservation law has held back shipping development. Adoption of the UNCTAD 40:40:20 proposal would have been

drastic and detrimental in light of the miniscule fleet of six to eight years ago, but a cargo reservation figure of ten to fifteen percent would have been appropriate. The rationale for this is simple. On the realistic assumption that Saudi Arabia will exist for a considerable time into the future because of its massive oil reserves and earnings, and the levels of trade initiated in 1974 would be maintained or grow; the need for ships was assured. However, without the cargo reservation law foreign ships had a virtual monopoly on international trade. The complexities of starting a shipping fleet are formidable enough without the added worry of no assured cargo. Institution of the ten to fifteen percent cargo reservation figure would have removed some of the problems of starting a fleet and would have promoted development. Even today the non-adoption of a cargo reservation policy is hurting the Saudi fleet. If one considers the share of world seaborne trade Saudi Arabia generates, it seems reasonable for their ships to carry a larger portion of it.[24] Now, the UNCTAD 40:40:20 proposal appears suitable.

Native Manning Problems

The lack of native shipboard personnel has limited growth since it is Saudi Arabia's desire to have nationals manning its vessels. The primary reason for the lack of sea-going personnel is that Saudi Arabs do not make good sailors (Normann, 1983, p.c., Isaak, 1984, p.c.). Whatever the causes of Saudi Arab ineptness for marine equipment, their poor aptitude for the sea is reflected in the small share of Saudi participation in Arab maritime history, the low number of cadets trained at AMTA and in England, and the predominance of foreigners crewing Saudi vessels.[25] Unfortunately, their inherent ineptness for the sea is not easily remedied.

Within Saudi Arabia there are no formal maritime training facilities that could influence the state of maritime training, although one is planned for Umm Sidra (Couper, 1980, 35).[26] As of 1983, all Saudi personnel must go abroad. Aside from AMTA which is regional in scope, it is noteworthy that Egypt (Alexandria), Iraq (Basrah), Algeria (Bon Ismail), Tunisia (Sousse), Morocco, and Libya all have their own schools (Lones, 1978, 33; Couper, 1980, 35). Operating Saudi vessels is costly because of the outflow of currency in the form of wages, repair bills, inspections, and associated costs.

Inappropriate Cargo Minimums

In terms of port operations and overall economics the establishment of imported cargo minimums on February 1, 1978, was theoretically sound. However, for Saudi ships it was not welcome news. The minimum cargo policy stipulated that the smallest allowed shipment of any commodity would be one 1,000 tons (E.I.U.S., 1978, No. 1). Anything smaller was prohibited. The policy's four-fold purpose was to facilitate port operations, reduce port congestion, keep the prices of goods and services down and hence, to curb inflation.

In theory the idea was good. However, one must realize that 1,000 tons (20,000 lbs.) is a sizeable quantity and there are many commodities which because of size and weight require an excess number of them to meet the policy stipulation, since there is only so much demand for any given commodity. Therefore, a shipper has the choice of importing excess, insufficient, or not at all depending on the time interval between ship trips, the number of ships headed to Saudi Arabia from any given port, and the fluctuations in demand for the commodity.[27] Aside from the above detrimental effects, Saudi vessels which would rely on

small shipments lost a source of revenue. While it is true that foreign ships lost as well, one must realize that foreign ships were often preferred by western exporters and they were better organized to combat the situation. Saudi ships were new at the game, hence they were more susceptible to the competition's cut-throat activities.

Rigorous Customs Inspections

In May 1979 the government instituted a highly rigorous customs inspection of every container being unloaded in Saudi Arabia under the pretense of searching for arms and liquor. This was repressive. It mandated that all containers have four doors to facilitate inspection (E.I.U.S., 1979, No. 3). The policy created two severe problems. It contributed to port congestion by drastically slowing unloading operations. In a sense this policy negated the effects of the policy of cargo minima. Second, it called for a brand new style of container since conventional containers acceptable everywhere else have two doors. As is obvious, this is both highly impractical and uneconomic. With the introduction of the new customs policy Jiddah handled only 480 containers per day and Dammam handled only 270 per day in mid-1979 (E.I.U.S., 1979, No. 3). Considering the size of those ports at the time and the fact that a single containership is easily capable of carrying the larger number of containers, it meant that in the strictest sense only one ship per day was being unloaded. This policy only compounded the backlog problem of ships waiting to unload.[28] Naturally, every major shipping line protested but the government refused to change its policy.

On May 24, 1982, a new ruling concerning containerized cargoes came into effect; the purpose of which was to ensure thorough customs inspections were conducted as quickly as possible with minimum damage to the

cargoes, thereby facilitating unloading operations (E.I.U.S., 1982, No. 2). Goods such as timber, plywood, steel structures, building materials, bagged cargoes, cargoes in drums (unless palletized or unitized to allow forklift operations), heavy equipment and machinery (unless under 2,000 kg and suitably packed to allow forklift handling), and cars could no longer be shipped in containers. Though the ruling has its merits and serves its purpose the advantages of containerization are defeated, since non-containerized cargoes are demanded. The Saudis have rejected a notion that has been part of the marine transportation scene for nearly twenty years. This may explain why containerships comprise such a small portion of the fleet (Appendix A, Table 18, column Q). Some, of course, may see this policy as desirable since many containerships are ill-suited for non-containerized cargoes (economically speaking) and it promotes the general cargo freighter, of which Saudi Arabia has many (Appendix A, Table 18, columns K and L). The latter point, however, is not well-founded for three reasons. First of all, most Saudi freighters are old and inefficient. Secondly, port operations are hampered because of non-unitization of cargo and slower unloading times which contribute to port congestion. Lastly, the policy is just as frustrating and undesirable for Saudi shipowners as it is for the foreign operators. Consequently, it does nothing to encourage Saudis into the business.

Economic Growth

There have been three major economic factors supporting development of the Saudi fleet. One is trade, the second is internal industrialization, and the third is port development. Though the bunker subsidy is considered the major direct promoter of the fleet, it would have been

useless without a shipping demand. These three factors have significantly fostered Saudi fleet development and are the justification for it.

Trade, particularly the difference between commodities imported and exported, influences the diversity of ships. The volume of trade naturally determines the sizes of the various types of vessels and their number. Industrialization within a country creates a demand for materials associated with a pattern of industrial activity, which in turn demands specialized carriers. The level of industrialization determines fleet tonnage. Those industries that are export-oriented require a different specialized carrier for their products. Ports are the country's interchange points with the world. If inadequate, unappropiate, or nonexistent then shipping is discouraged.

Trade

Following the 1973/74 oil crisis, Saudi Arabia's trade turnover changed drastically. Table 10 depicts the monetary value of Saudi Arabia's trade for selected years. A few points are obvious. The first is that the level of trade increased tremendously following the oil crisis. The value of exports increased almost four-fold while the value of imports increased roughly one and a half times in the following year. Considering the quadrupled oil prices, the 1974 export figure is somewhat misleading, though an analysis of cargo tonnage loaded for export does show a 16% increase (U.N. Stat. Yrbk., 1981). The important item is the value of imports. The jump in imports exemplifies the implementation of a downstream policy. By 1981 the value of exports had increased more than thirteen-fold over the 1973 figure while imports had increased nearly eighteen-fold (U.N. Stat. Yrbk., 1981).

TABLE 10

MONETARY VALUE OF SAUDI ARABIAN TRADE FOR THE YEARS 1966 TO 1981 AND SELECT EARLIER YEARS.

| Year | Total imports c.i.f. in millions of U.S. dollars. | Total exports f.o.b. in millions of U.S. dollars. | Portion of exports that are oil, LPG, and refined petroleum products in millions of U.S. dollars. | Portion of exports that are non-petroleum in millions of U.S. dollars | U.S. dollar/ Saudi Riyal conversion equivalent. [a] |
|---|---|---|---|---|---|
| 1938 | NA | 10.0 | NA | NA | NA |
| 1948 | NA | 300.0 | NA | NA | NA |
| 1953 | NA | 570.0 | NA | NA | NA |
| 1955 | NA | 700.0 | NA | NA | NA |
| 1958 | NA | 800.0 | NA | NA | NA |
| 1960 | NA | 845.0 | NA | NA | NA |
| 1963 | NA | 1,060.0 | NA | NA | NA |
| 1965 | NA | 1,393.0 | NA | NA | NA |
| 1966 | 517.0 | 1,744.0 | NA | NA | NA |
| 1967 | 507.0 | 1,799.0 | NA | NA | NA |
| 1968 | 563.0 | 2,026.0 | NA | NA | NA |
| 1969 | 747.0 | 2,001.0 | NA | NA | NA |
| 1970 | 692.0 | 2,423.7 | 2,417.4 | 6.2 | 4.50 |
| 1971 | 806.0 | 3,845.0 | NA | NA | 4.41 |
| 1972 | 1,125.0 | 5,491.0 | NA | NA | 4.14 |
| 1973 | 1,988.0 | 9,091.0 | NA | NA | 3.64 |
| 1974 | 2,859.0 | 35,556.0 | NA | NA | 3.55 |
| 1975 | 4,214.0 | 29,669.0 | 29,466.1 | 202.8 | 3.38 |
| 1976 | 8,694.0 | 38,287.0 | NA | NA | 3.53 |
| 1977 | 14,651.0 | 43,465.0 | NA | NA | 3.52 |
| 1978 | 20,424.0 | 40,716.0 | NA | NA | 3.39 |
| 1979 | 24,462.0 | 63,427.0 | NA | NA | 3.36 |
| 1980 | 30,211.0 | 109,112.7 | 105,861.8 | 3,250.9 | 3.32 |
| 1981 | 35,244.0 | 120,240.0 | NA | NA | 3.43 |

a - The exchange rate is the average annual figure calculated from the monthly average figures.
Note: NA - data not available.

Source: Aside from the exchange rates which are from the E.I.U.S. (various years), all figures are from the U.N. Stat. Yrbk. (select years).

The second point, which shows the continued integration of the downstream effect, is the increase in imports in relation to exports. Table 11 depicts the ratio of one to the other for the period 1970 to

TABLE 11

PERCENTAGE RELATIONSHIPS OF IMPORTS TO EXPORTS AND VICA-VERSA FOR THE PERIOD 1970 TO 1981.

| Year | Percent Ratio of Imports/Exports | Percent Ratio of Exports/Imports |
|---|---|---|
| 1970 | 28.55% | 350.24% |
| 1971 | 20.96% | 477.05% |
| 1972 | 20.49% | 488.09% |
| 1973 | 21.87% | 457.29% |
| 1974 | 8.04% | 1,243.65% |
| 1975 | 14.20% | 704.06% |
| 1976 | 22.71% | 440.38% |
| 1977 | 33.71% | 296.67% |
| 1978 | 50.16% | 199.35% |
| 1979 | 38.57% | 259.29% |
| 1980 | 27.69% | 361.17% |
| 1981 | 29.31% | 341.16% |

Source: Extrapolated from Table 10.

1981. In 1974 imports accounted for only eight percent of the value of exports while in 1981 they accounted for nearly a third. The best year was 1978 when imports accounted for half the value of exports.

The third point is the increase of exports of non-oil commodities in relation to petroleum based exports. Though data is scant, it is observed in extrapolation of Table 10 that in 1975 only 0.68% of the value of exports was in non-oil goods. In 1980 the figure had risen four-fold to 2.97%. Saudi Arabia has used oil revenues to develop other industries resulting in the growing ability of the Kingdom to compete in exports of other goods.

TABLE 12

ANNUAL PRODUCTION OF CRUDE OIL (IN MIILIONS OF U.S. BARRELS).

| Year | ARAMCO | GETTY | AOC | Total | Average Production (barrels per day) | Percent (%) change over prior year.[a] |
|---|---|---|---|---|---|---|
| 1938 | 0.5 | 0 | 0 | 0.5 | <1.00 | NA |
| 1946 | 59.6 | 0 | 0 | 59.6 | <1.00 | NA |
| 1950 | 199.5 | 0 | 0 | 199.5 | <1.00 | NA |
| 1955 | 352.2 | 4.4 | 0 | 356.6 | <1.00 | NA |
| 1956 | 360.9 | 5.8 | 0 | 366.7 | 1.00 | +2.8% |
| 1957 | 362.1 | 11.6 | 0 | 373.7 | 1.02 | +1.9% |
| 1958 | 370.5 | 14.7 | 0 | 385.2 | 1.06 | +3.1% |
| 1959 | 399.8 | 21.2 | 0 | 421.0 | 1.15 | +9.3% |
| 1960 | 456.4 | 24.9 | 0 | 481.3 | 1.32 | +14.3% |
| 1961 | 508.3 | 28.7 | 3.7 | 540.7 | 1.48 | +12.3% |
| 1962 | 555.0 | 33.7 | 11.0 | 599.7 | 1.64 | +10.9% |
| 1963 | 594.6 | 33.1 | 24.1 | 651.8 | 1.79 | +8.7% |
| 1964 | 628.1 | 34.4 | 31.8 | 694.3 | 1.90 | +6.5% |
| 1965 | 739.1 | 33.0 | 32.8 | 804.9 | 2.21 | +15.9% |
| 1966 | 873.3 | 30.2 | 46.1 | 950.0 | 2.60 | +18.0% |
| 1967 | 948.1 | 25.1 | 50.0 | 1,023.8 | 2.80 | +7.8% |
| 1968 | 1,035.8 | 23.2 | 54.7 | 1,114.1 | 3.04 | +8.8% |
| 1969 | 1,092.3 | 22.7 | 58.9 | 1,173.9 | 3.22 | +5.4% |
| 1970 | 1,295.3 | 28.6 | 62.6 | 1,386.7 | 3.80 | +18.1% |
| 1971 | 1,641.6 | 33.7 | 65.3 | 1,740.6 | 4.77 | +25.5% |
| 1972 | 2,098.4 | 28.5 | 75.0 | 2,201.9 | 6.01 | +26.2% |
| 1973 | 2,677.1 | 23.6 | 71.9 | 2,772.6 | 7.60 | +26.3% |
| 1974 | 2,996.5 | 29.8 | 68.7 | 3,095.1 | 8.48 | +11.6% |
| 1975 | 2,491.8 | 31.2 | 59.5 | 2,582.5 | 7.08 | -16.6% |
| 1976 | 3,053.9 | 29.7 | 55.7 | 3,139.3 | 8.58 | +21.2% |
| 1977 | 3,291.2 | 32.0 | 34.8 | 3,358.0 | 9.20 | +7.3% |
| 1978 | 2,944.1 | 29.5 | 56.3 | 3,029.9 | 8.30 | -9.8% |
| 1979 | 3,376.7 | 30.1 | 72.6 | 3,479.4 | 9.53 | +14.8% |
| 1980 | 3,525.1 | 28.3 | 70.2 | 3,623.5 | 9.93 | +3.9% |

a - Calculated by the author for the years 1938 through 1970.
Note: NA - data not available.

Source: El Mallakh, 1982, 55 (for the years 1938 through 1970) and the Ministry of Petroleum and Mineral Resources, 1981 (for the years 1971 through 1980).

Oil, of course, is the principal export that Saudi Arabia has to offer and will remain so. Oil and, on a growing scale, other petroleum products (partly to totally refined) have always accounted for more than 97% of Saudi exports by value. For most years of the past decade the figure is above 99% (U.N. Stat. Yrbk., 1981). Table 12 depicts the annual oil production data for select years. Of the annual totals more than 98% is exported (Moliver & Abbondante, 1980). On the average 94% of the exports are in the form of crude oil (Moliver & Abbondante, 1980, 29); the rest are refined products. The major exported refined products, in descending order, are fuel oil, gasoline or naphta, LPG, and diesel oil. Figure 4 depicts the main destinations of Saudi oil exports. Aside from these seven, other importers of Saudi exports are the Netherlands Antilles, Singapore, Spain, and Brazil.

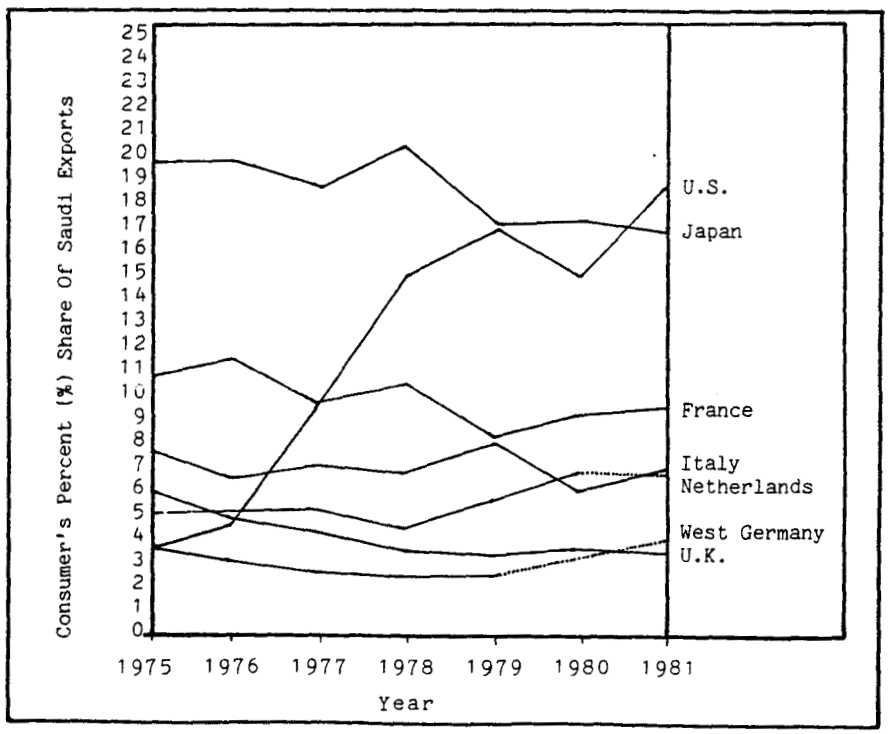



FIGURE 4. SAUDI EXPORTS TO MAJOR CONSUMING NATIONS IN TERMS OF PERCENTAGE SHARE PER ANNUM.

The non-oil exports, so small that they are barely worth mentioning are fertlizers in the form of urea and ammonia, and the items discussed in chapter two.

Imports, on the other hand, are very diverse, ranging from ore, building materials, machinery, and transport equipment to textiles, office equipment, appliances, food, animals, and every conceivable luxury item. The main sources of Saudi Arabia's imports are the U.S., Japan, West Germany, Italy, the U.K., France, and the Netherlands. Figure 5 depicts the principal sources of Saudi imports. Imports increased substantially both in value, as noted earlier, and quantum in the years after the oil crisis. This is reflected in the annual volumes of discharged cargoes for the ports. In 1973 Saudi Arabia's ports handled approximatey three million tons with Jiddah handling 1.32 million

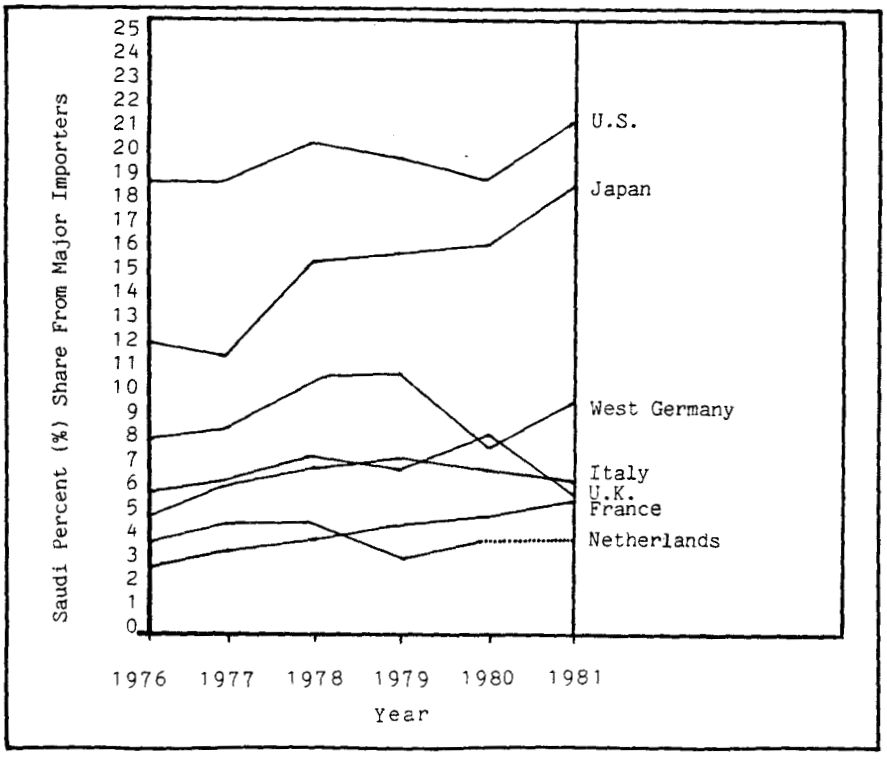



FIGURE 5. SAUDI IMPORTS FROM MAJOR SUPPLIERS IN TERMS OF PERCENTAGE SHARE PER ANNUM.

tons (E.I.U.S., 1974) and Dammam roughly another million (El Mallakh, 1982, 192). For the eleven-month period ending with November 1982 these same two ports respectively handled 17,318,756 tons unloaded from 5,708 ships and 13,183,559 tons unloaded from 2,690 ships (Rittmann Ltd., 1983, 1366--67). Table 13 shows the trade value with different regions of the world for one year.

TABLE 13

TRADE BALANCE OF IMPORTS AND EXPORTS BETWEEN SAUDI ARABIA AND THE WORLD IN 1977.

| Area/Region | Total Value of Imports in millions of U.S. dollars. | Total Value of Exports in millions of U.S. dollars. |
|---|---|---|
| Arab League countries | 2,096.0 | 1,686.1 |
| (Kuwait) | 653.4 | 7.7 |
| (Bahrain) | 216.5 | 957.4 |
| Asia (Rest of) | 2,901.1 | 13,174.4 |
| (Japan) | 1,699.2 | 8,261.4 |
| Non-Arab Middle East countries | 142.3 | 231.8 |
| Africa (excluding Arab League) | 48.3 | 209.9 |
| Oceania | 88.1 | 611.9 |
| North and South America | 2,812.2 | 8,037.2 |
| (United States) | 2,733.2 | 4,140.6 |
| (Bahamas) | 0.3 | 1,238.9 |
| Western Europe | 5,366.7 | 17,192.1 |
| (West Germany) | 1,227.3 | 1,259.9 |
| (Italy) | 900.0 | 3,176.7 |
| (United Kingdom) | 904.0 | 1,781.5 |
| (Netherlands) | 647.2 | 2,307.7 |
| Eastern Europe | 122.7 | 0.3 |
| Others and Unclassified | 1,098.9 | 2,381.5 |

Note: These figures will not tally with U.N. figures in Table 10 due to rounding and U.N. data quirks.

Source: Fairplay, 1980, 625.

Because of the large difference between commodities imported and exported Saudi Arabia needs two separate shipping fleets. The nature of the cargoes require different specialized carriers which are incompatible with each other in terms of ability to transport each other's cargoes. The result is that there is an export fleet comprised of crude oil tankers, LNG carriers, chemical transports, and products tankers and an import fleet consisting mainly of freighters, ore/bulk carriers, containerships, and livestock carriers. Ignoring the small amount of

two-way trades that the passenger vessels and small freighters of the import fleet engage in and the limited cross-trading by a few vessels, both fleets are predominantly employed in one-way trades which consequently drive up costs. In the case of the export fleet Saudi Arabia's tank vessels carry petroleum products out but return in ballast. The import fleet does the opposite. It goes out empty (aside from minute quantities of fertilizers and chemicals) but returns loaded. The ships of both fleets are not engaged in revenue-generating employment for half their voyages. Therefore, the costs incurred for the empty portion of the roundtrips must be tacked onto the costs of carriage of the goods on the other half of the trip. The result is that the cost of the commodities to the consumers are higher than they would have otherwise been if the ships were engaged in two-way trades.

In the case of exports Saudi Arabia is not hurt since it simply adds the transport costs of the empty return voyages to the price of shipment that the buyers must pay. However, the opposite occurs regarding imports. Then Saudi Arabia is the buyer and the costs of the empty outbound voyages must be borne by Saudi Arabia since its vessels are merely picking up goods already purchased. Even if the exporting country's ships or third party vessels are used, Saudi Arabia still bears the costs of empty return voyages, since the exporter includes the costs in the shipping rates or hides it in the selling price.

Industrialization

Industrialization was one of the major effects of downstreaming in the aftermath of the oil crisis. Saudi Arabia developed and pursued an ambitious plan of industrial development, which today allows it to be an exporter of petrochemicals and fertilizers. The pursuit of industrial

development created a large demand for various commodities, which for a country desiring economic independence, mandated the acquisition of an appropriate-sized national shipping fleet.

Today one finds a wide variety of industries, manufacturers, processors, and food producers in Saudi Arabia. Table 14 offers a small sample of some of the activities, firms, special projects, and operations going on. As is obvious the industrial base is becoming diversified. In addition, the refining capacity of the oil industry has increased tremendously and by 1985 should be 1.97 million barrels per day (Business International, 1981, 44). The interesting trend of all

TABLE 14

INDUSTRIAL ACTIVITIES, PROJECTS, AND COMPANIES IN SAUDI ARABIA ONGOING AT PRESENT.

MAJOR ACTIVITIES (in general):

| | | |
|---|---|---|
| *Refinery building | *Desalination plants | *Sugar mills |
| *Petrochemical complexes | *Electric plants and power grids | *Farming |
| *Cement plants | | *Railroads |
| *Steel mills | *Road/Highway construction | *Irrigation systems |
| *Mining | *Public Housing | *Sewage systems |

FIRMS/COMPANIES (engaged in industrial projects):

| | |
|---|---|
| *ABF | Arabian Biscuit Factory (biscuits, crackers, etc.) |
| *ACLD | Arab Company for Livestock Development (broilers) |
| *AFIC | Arabian Fiberglass Insulation Company (insulation materials) |
| *AIF | Arab Illumination Factory (lighting equipment) |
| *EATB | E.A. Tuffali & Brothers (truck assembling) |
| *GSFMO | Grain Silos & Flour Mills Organization (wheat) |
| *NPC | National Pipe Company (piping) |
| *QDPF | Qassim Date Packing Factory (dates) |
| *RC | Royal Corporation (silver refining) |
| *SAFCO | Saudi Arabian Fertilizer Company (fertilizers) |
| *SCC | Saudi Cement Company (cement) |
| *SCDC | Saudi Cereals Developing Company (cereals, grain, etc.) |
| *SFHP | Saudi Factory for Hygienic Paper (tissue, toilet paper, etc.) |
| *SLTTC | Saudi Livestock Transport & Trading Company (lamb) |
| *STMC | Saudi Tractor Manufacturing Company (tractor assembling) |

SPECIAL PROJECTS AND OPERATIONS (case examples):

*JSRY has two floating drydocks -- one with a 45,000 d.w.t. capacity, and the other with a 16,000 d.w.t. capacity.
*HADEED is building an 850,000 tons per year steel mill.
*SAMC is building a 600,000 tons per year methanol plant at Jubail.
*YANPET is building a 450,000 tons per year ethylene plant at Yanbu.
*SPPC is building a petrochemical plant that will produce 656,000 tons per year of ethylene, 295,000 tons per year of styrene, 454,000 tons per year of ethylene chloride, 210,000 tons per year of crude ethanol, and 335,000 tons per year of caustic soda at Jubail.
*SAUDEX is building a 260,000 tons per year LDPE plant at Jubail.
*Iron has been found at Wadi Sawiwin totalling 300,000,000 tons.
*Gold, estimated to be 30 tons worth $177 million, is being mined at Mahd Al-Dahab along with 90 tons of silver, 8,000 tons of copper, and 27,000 tons of zinc.

Source: Business International, 1981; E.I.U.S. (various years).

this activity is the change in imports. As the industrial base becomes more secure and capable, there is a reduction in the need for finished goods and a rise in demand for raw materials and dismantled components. The impetus for much of this industrialization is derived from the IDF which provides interest-free loans to Saudi entrepreneurs (E.I.U.S., 1978, No. 2).[29]

Ports

At the close of 1983 there were twentyone ports, plus the oil exporting facilities at Ras Tanura. The five major ports are Jiddah, Yanbu, Jizan, Dammam, and Jubail. The development of Saudi Arabia's ports has been heavily supported by the government. The Third Five-Year Development Plan (1980--1985) states that port systems are the main corridors of the country's trade with the world and that no other transportation mode offers the high freight capacity at such low per-unit cost (Business International, 1980, 109). An interesting contradiction here is that the government recognizes the vital role of shipping yet its actions in support of the industry have been few, inconsistent, occasionally inappropriate, and frequently negative.

A review of budget commitments, expenditures, and actual physical growth during the past decade provides an effective analysis of port development. In 1972 there were only three ports worthy of note and, by western technological standards, they were quite inferior. Jiddah consisted of two berths before the 1973 expansion of port area and addition of nine deepwater berths (E.I.U.S., 1974). Its volume capacity increased from 800,000 tons per year to 1.5 million tons per year that year. Dammam had two piers with four berths and a small fertilizer exporting wharf (E.I.U.S., 1974). Yanbu handled 350,000 tons per year.

In 1976 the government gave out contracts totalling $3.5 billion for port construction. Jubail and Yanbu were chosen to be major industrial complexes specializing in petrochemicals production. Jubail alone received $944 million for the industrial portion of the port and $855 million for the commercial component. The ports of Damman, Jiddah, and Jizan respecticely received $1.1 billion, $1.02 billion, and $120 million for expansion and modernization. Another $160 million was allotted for design and construction of the port at Ras al-Mishal (E.I.U.S., 1976, No. 3).

The backwardness and inability of Saudi Arabia's ports to deal with the tremendous import trade volume following the oil crisis was evidenced in the massive backlog of ships waiting to unload. The severity of the problem was compounded by the smallness of the ports.

In 1977 further improvements were made. At Jiddah a $12 million cereals-handling and processing plant was constructed. Dammam was dredged at a cost of $510 million. A cement-handling plant was installed at Yanbu at a cost of $28 million. Jubail went ahead with a second petrochemical complex which cost $810 million and installed eleven more container cranes at a cost of $93 million. Also, two new ports were built; one at Ras al-Ghair, and the other at Thuwar. Each cost $260 million. In 1979 JSRY initiated construction of drydock facilities.

As of early 1982, the five major ports plus Ras al-Ghair and Qadimah had a combined total of 130 berths with a 41.2 million d.w.t. capacity (E.I.U.S., 1981, Supplement).

Currently (1983), Jiddah handles fifty percent of all imports and Dammam handles 34% (E.I.U.S., 1983, No. 2). Only Jiddah operates at

near capacity. Port growth has slowed, and it is believed that only Jubail, Yanbu, and Jizan will see further development (E.I.U.S., 1983, No. 2).

The importance of port development to Saudi shipping is four-fold. First, Saudi ships now have excellent facilities to serve them. Hence the frustrations shipowners experienced in the mid-1970s are gone. Second, Saudi ships should be receiving better service than their foreign counterparts because of improved processing of entry and port service. Saudis have the homeport advantage of connections, associations, and local knowledge. Third, the inflationary pressures of the boom years caused by the ports have subsided. Port operations are normalized. Saudi ships have equal, if not preferential, footing in opportunities of carriage of imports. This is an incentive. Four, there are many more ports, both diversified in primary function and segregated by regional demands. Saudi ships can take advantage of these local situations. While it is true that foreign vessels may benefit from the above, it must be remembered that they are losing their competitive edge as the Saudi ships attain parity in operations, equipment, knowhow, and homeport advantages.

Geopolitics

Before closing, a brief discussion on the role Mahan's and Craven's principles pertaining to seapower and the development of sea-oriented societies (states) have had on Saudi shipping growth is germane. The long-standing concept of geopolitical relationships between the sea, land, and national development is recognized and accepted by some political scientists, naval strategists, policy-makers, and advocates of maritime development. Consequently, the function it has had in Saudi

shipping development is addressed to appease the adherents of this ideology.

Mahan presented four principles, derived from empirical evidence, which according to him governed the ability of a nation to utilize the sea effectively. To make them palatable and applicable in modern times (the latter part of the twentieth century) Craven prescribed two modifying principles. These six principles are as follows:

1. "The ability of a nation to utilize the sea effectively depends on the topology of the land-sea relationship, with superiority accorded to islands, to singly connected domains such as peninsulas, then to multiple coastlines, and with inferiority accorded to nations having a single access or no access to the sea."
2. "The configuration of the coast in terms of the capacity for port and harbour, access to inland waterways and availability of quays" determines the ability of a nation to utilize the sea effectively.
3. "The number of people in the vicinity of the coast having knowledge and experience of the technology of the sea" dictates the nation's ability to use the sea effectively.
4. "The character of the people and their government" must be supportive and promote utilization of the sea and acquisition of knowhow.
5. "Technology determines the scale of the significant geologistical configurations established for a particular time (i.e., whether an island is an island in the Mahanian sense, or an islet, or a continent)."

6. "The physical character of the sea, which rewards successful voyages and punishes through its many perils, is a medium which conditions nations, peoples and economic entities in the development of the law and commerce of the sea" (Craven, 1976, 9).

In relation to Saudi Arabia it is observed that Mahan's and Craven's principles do apply but with modification and reinterpretation. The first two are certainly applicable and were inherent in the discussion on geography as a factor in shipping development. Saudi Arabia's domination of a peninsula isolated from other regions and trade partners necessitates shipping. The highly developed ports foster shipping. Mahan's last two principles, however, do not fit directly. As was pointed out in chapter two, historical involvement of Saudis in commerce is lacking because of tribal nomadicism and domination in commerce by adjacent coastal societies. It was seen in the section on manning that Saudi Arabs display a poor aptitude for grasping marine technology and knowhow. Furthermore, ample evidence of unsupportive government actions was presented earlier in this chapter such as the customs regulations, cargo minimums, and lack of appropriate policies. All these negative aspects invalidate the notion that the character of the people and government is condusive to shipping and outrightly demonstrates that knowledge and experience are lacking.

The third and fourth principles are valid though if viewed in a different perspective. The Saudis have hired foreigners and expatriates possessing intimate marine expertise and knowhow to operate their ships. The government has embraced joint ventures thereby the experience has been brought in (imported). The Saudis have circumvented their native negative influence on the principles by importing positive

counteractive components. Through time the third and fourth principles will become applicable in their original sense as the Saudis acquire the knowhow and adopt a positive attitude. The bunker subsidy is an example of the change in attitude.

Craven's two principles justify the application of Mahan's principles in today's times. Technology is the basis for the existence of the Saudi fleet since it was technology that permitted oil production, downstreaming, port development, and modern shipping. Without technological advancement Saudi Arabia would still be the backwards country it once was. The physical character of the ocean medium and its affects on shipping goes without saying. Saudi shipping would not be in its present state unless an appropriate attitude had been subscribed to.

In retrospect, Mahan's and Craven's principles do apply but, in a subliminal format. One will not find outright reference to these principles as having guided shipping development anywhere in Saudi Arabia.

## Conclusion

Of the four factors discussed -- geography, Islam, policy considerations, and economic growth, the latter was probably the most direct regulator of the development of the shipping fleet. Industrialization spurred the need for a large transport system. To a lesser extent it also regulated trade. Trade, however, can act independently of industrialization, and in Saudi Arabia's case it does. It guided development of the fleet directly. Port development has facilitated shipping operations. Policy serves to implement development. In this case the policies have been controversial, some are beneficial, others detrimental. Of the policies reviewed the bunker subsidy has had the most far-ranging positive effect. Islam has dictated the structure of fleet operations

via its omni-present permeation of Saudi society. Geography is the pre-premise for the fleet's existence.

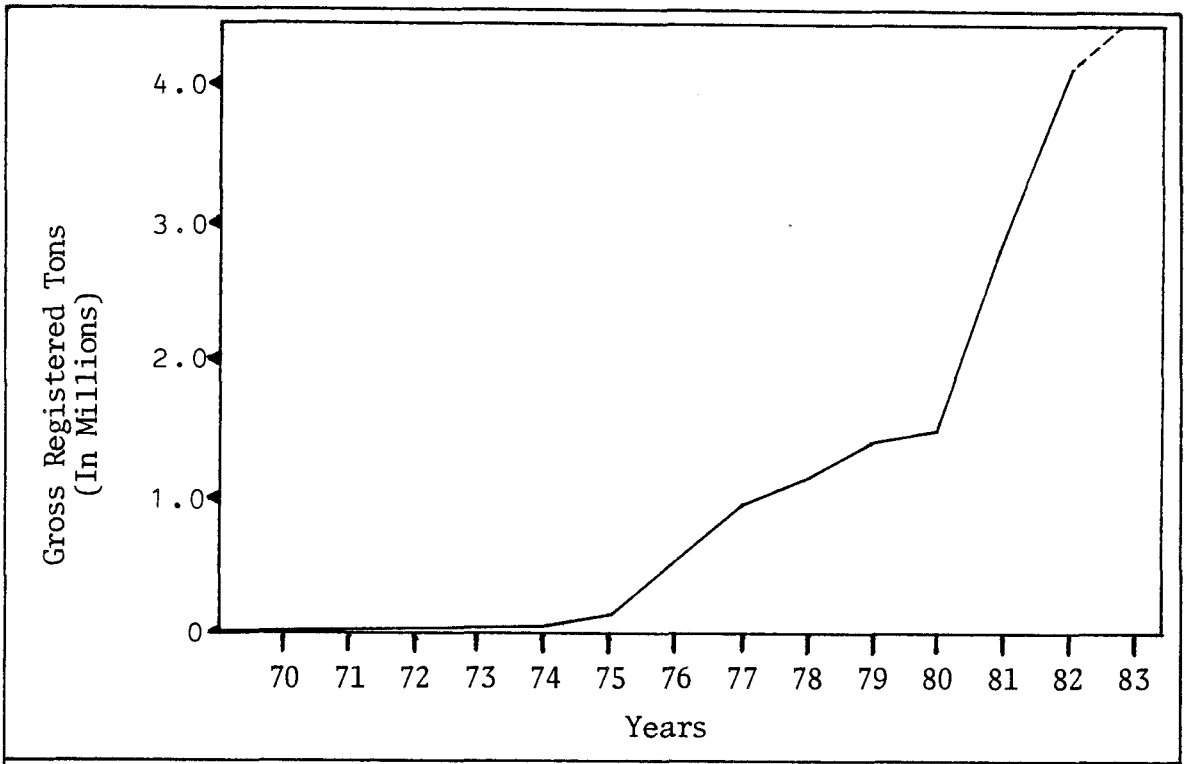
The contribution of the Saudi fleet to GDP is negligible. Based on 1980 dollars the 1975 contribution to GDP by the entire transport sector was only 3.17% and in 1980 it had risen to 5.67% (El Mallakh, 1982, 197).[30] The Saudi fleet at most accounted for one percent in 1980. For 1985 the GDP contribution of the transport sector is projected to rise three percent (El Mallakh, 1982, 225). Aside from the small support that AMPTC, UASC, Petromin Tankers, and NSCSA receive, there is no government expenditure on shipping and this is reflected in the budgets and Five-Year Plans. Consequently, the shipping fleet is not a drain on the economy.

## IV. THE SAUDI ARABIAN FLEET

### Quantitative Analyses

The following pages contain a quantitative analysis of the Saudi fleet. The source of the data are the annual Lloyd's Register of Shipping Statistical Tables. Tables and graphs prepared from the statistics appear in Appendices A and B.

The Saudi fleet today comprises 347 vessels totalling more than 4.3 million g.r.t. (~7.7 million d.w.t.).[31] In 1973 it consisted of 43 ships totalling 58,530 g.r.t. (79,491 d.w.t.). Table 17, column C and D in Appendix A show the annual figures for the other years. The percentage increase during the past nine years has been 7,349.71%. Figure 6 depicts the growth of the Saudi fleet.




Source: Derived from Lloyd's Register of Shipping Statistical Tables.

FIGURE 6. GROWTH OF THE SAUDI ARABIAN FLEET.

In terms of g.r.t., the fleet presently accounts for 1.012% of the world fleet in contrast to the 0.02% share it had in 1973 (Table 17, column H in Appendix A). Currently it is ranked 20th in the world (Table 17, column J). If one excludes the flag-of-convenience shipping nations since their fleets are not true national fleets, the Saudi fleet would rank 16th or 17th. In 1973 it was ranked 74th (Table 17, column J) and was, for all practical purposes, insignificant.

Oil tankers, by far, account for the largest share of the tonnage of the Saudi fleet. As of January 1, 1983, Saudi Arabia had 94 tankers (both crude oil and refined products tankers) totalling some 5.75 million d.w.t. (Table 18, column A). The tanker fleet accounts for slightly more than two thirds (67.25%) of the entire Saudi fleet. In terms of Saudi Arabia's share of the world tanker tonnage, its tankers account for 1.734% (Table 18, column EE).

The second biggest share of Saudi fleet tonnage is comprised of the multi-deck general cargo freighters. As of January 1, 1983, Saudi Arabia had 92 freighters totalling about 650,000 g.r.t. (Table 18, column L). The multi-deck freighters account for 15.19% of the Saudi fleet tonnage and 1.085% of the world multi-deck freighter fleet tonnage (Table 18, column KK). The multi-deck freighters along with the single-deck freighters have always been a large category of vessels in the Saudi merchant marine, and as noted in chapter two the oldest vessel type in the fleet.

The single-deck general cargo freighters and the combination passenger/cargo ships respectively rank tenth and twelfth tonnage classes. As of January 1, 1983, there were eighteen single-deck freighters totalling 16,701 g.r.t. and two combination passenger/cargo ships totalling

9,335 g.r.t. (Table 18, columns K and M). In terms of percentage share, they individually account for 0.38% and 0.21% of the Saudi fleet. However, since their primary function is general cargo transport I group them with the multi-deck freighters, to create a new set of statistics for the general cargo fleet as a whole. Therefore, the Saudi general cargo fleet is comprised of 112 ships totalling some 676,000 g.r.t. and accounts for 15.78% of the entire fleet. The fleet is 0.839% of the world general cargo fleet.

Together the tanker fleet and general cargo fleet account for more than eighty percent (83.03%) of the Saudi merchant marine. Since the tankers are an exporting fleet while the general cargo vessels are nearly all importers, more than eighty percent of the Saudi fleet's occupation in trade is explained.

The ore/bulk carriers are the third largest component of the Saudi fleet with nine vessels totalling approximately 168,000 g.r.t. (Table 18, column G). They account for 3.89% of the Saudi fleet and 0.179% of the world fleet (Table 18, column HH). Saudi Arabia's ore/bulk carriers exemplify the application of downstreaming. Prior to 1978 Saudi Arabia had no ore/bulk carriers. This acquisition represents an attempt by the Kingdom to diversify its industrial base by bringing in the raw materials and manufacturing within the country. Having a national fleet helps the country be less dependent on or even independent of foreign carriers. The high level of industrialization occurring after the oil crisis brought the ore/bulk carrier fleet into existence.

A single ore/oil carrier constitutes the fourth largest share of the Saudi fleet. The T.V. Alkisma Alarabia totals nearly 144,000 g.r.t. (Table 18, column I). It alone accounts for 3.34% of Saudi fleet

tonnage and 0.553% of the world's ore/oil and bulk/oil carrier tonnage (Table 18, Column II). It is unique in that it has the dual role of an exporter of oil and an importer of ore. The cost of operating the T.V. Alkisma Alarabia is considerably reduced, since it is engaged in two-way revenue-generating voyages. Though tank cleaning costs are incurred they are more than offset by what the vessel can produce in revenue.

The cargoes the vessel carries and its duality in trade roles means it may be categorized as a tanker or bulk carrier. Depending in which capacity it is engaged in, the vessel's tonnage may be added to the tanker fleet or to the bulk carrier fleet tonnage. If serving as a tanker it may then be said that the tanker component of the Saudi fleet rises from 67.25% to 70.59%. Conversely, if employed as a bulk carrier then the Saudi bulk carrier fleet tonnage rises from 3.89% to 7.24% of the total fleet.

Regardless of which capacity the ore/oil carrier serves, it fits into one of the three vessel types already discussed and together with them accounts for over ninety percent (90.26%) of the Saudi fleet tonnage. It also is a further example of downstreaming.

The fifth largest share of the Saudi fleet consists of two liquid gas carriers totalling 66,309 g.r.t. (Table 18, column C). They account for 1.54% of the Saudi fleet and 0.745% of the world liquid gas carrier fleet (Table 18, column FF). The Saudi liquid gas carrier fleet is another example of the application of downstreaming. Prior to 1979 the Kingdom had none. The acquisition of the M.V. Petrogas I and M.V. Al Hada 2 support the diversification of the industrial base in producing other petroleum products for export by utilizing national carriers in the export trade.

The livestock carriers are the sixth largest segment of the Saudi fleet numbering ten vessels totalling 59,882 g.r.t. (Table 18, Column AA). These carriers account for 1.39% of the Saudi fleet but 16.158% of the world livestock carrier fleet (Table 18, column RR). Saudi Arabia possesses one of the largest livestock carrier fleets in the world with over one-sixth of the world's total tonnage. The acquisition of the livestock carrier fleet beginning in 1975 and growing to its present status is another example of the downstream effect. Saudi Arabia had always been involved in agriculture (on a subsistence level); hence, it was only natural that the agricultural sector of the economy would be enhanced. With the massive capital received following the oil crisis the importing livestock carrier fleet was acquired.

The rest of the categories of vessels comprising the Saudi fleet are listed in order from seventh largest to smallest: ferries and passenger ships (ten totalling 40,304 g.r.t.), containerships (two totalling 34,706 g.r.t.), supply ships and tenders (twenty totalling 16,900 g.r.t.), tugboats and towboats (54 totalling 14,065 g.r.t.), chemical tankers (four totalling 6,997 g.r.t.), and fishing vessels and trawlers (six totalling 1,108 g.r.t.). None of these categories of vessels individually accounts for more than one percent of the Saudi fleet tonnage. In relation to the respective world fleets only the Saudi supply ships and tenders exceed one percent, amounting to 1.324% (Table 18, column PP). The growth of the ferry and passenger ship fleet is the direct result of Saudi entrepreneurs capitalizing on the Mecca pilgrimage business. Figures 7, 8, and 9 in Appendix B show the growth trends for these categories for the years 1973 to 1981, as well as for the previously discussed categories.

The miscellaneous fleet consists of 23 vessels totalling some 180,500 g.r.t. (Table 18, column CC). It accounts for 4.19% of the Saudi fleet and 6.482% of the world fleet (Table 18, Column SS). Examples of some of the vessels included under the heading of miscellaneous are lighters, barges, and patrol craft. The diversity of vessels in this group precludes any one of them from having a significant share of Saudi fleet tonnage though when summed they become the third largest component.

The acquisition of chemical tankers, containerships, ferries, passenger ships, tugboats, towboats, supply ships, and tenders is all part of the development process. Some of these vessels do not directly engage in ocean trade but, rather, indirectly support shipping development by providing essential services. The continued growth of the general cargo freighter fleet is surprising. It must be remembered that in applying the downstream policy a country usually seeks modern development and consequently rejects antiquated notions. Freighters as a mode of cargo transport are, for the most part, considered outdated. However, in Saudi Arabia's case there are three reasons for their continued use. First is the cost of new vessels compared to the secondhand market cost. As will be observed later, Saudi shipping entrepreneurs have opted for purchasing "used" ships. This is in contrast to some of the other Arab nations which experienced rapid growth following the oil crisis. The abundant availability of secondhand ships contributes to this trend as well. Second is the favoritism shown by Saudis for the older vessel types (Seatrade Publications Ltd., 1982, 143). Apparently Saudi shipowners have a fondness for these older freighters and hence stick with them. Third is their suitability. Considering the Kingdom's customs

regulations, which favor non-unitized cargoes to a considerable extent, the freighters still have a place in trade since they are suited for such cargoes.

An important point to be made concerning the preceding discussion is the use of tonnage as the measurement of growth. Tonnage (gross registered tons) is an indirect form of measuring cargo capacity and is the standard used throughout the world.[32] In general cargo trades, revenue is normally computed on the basis of measurement not weight. Since g.r.t. measures a vessel's total enclosed cubic space above and within the hull, it is an indirect measurement of total available cargo capacity (OECD, 1980, 89).[33] Therefore, it is the better unit of measure for assessing growth, as cargo capacity is included.

In line with the above it is observed that if one analyzes the Saudi fleet by number of vessels in each category one finds the tugboat and towboat fleet ranked third with 54 vessels. Yet the total tonnage is only 14,065 g.r.t. (Table 18, column Y), and these vessels do not contribute directly to oceanborne commerce.

Perhaps a better example is to return to the comparison of the Saudi livestock carrier fleet to the world livestock carrier fleet but this time to compare the number of vessels. It is seen (Table 18, columns AA and BB) that Saudi Arabia has ten while the world has 106. The first thought is that Saudi Arabia's fleet share of the total world fleet is small (9.43%). However, when the tonnages of the two are compared Saudi Arabia's fleet accounts for 16.158%.

A different perspective of this argument applies to internal analyses of the categories of ships comprising the Saudi fleet. A good example is the comparison of Saudi Arabia's freighter fleet and

containerships. Five new unitized cargo ships (four RO/ROs and one containership) totalling 123,500 g.r.t. were added to the fleet in 1983 (Seatrade Publications Ltd., 1983, 135).[34] No freighters were under construction or order and even if one or two have since been acquired they will not affect the point being made. In terms of number of vessels, the freighter fleet appears tremendous with 112 as opposed to only seven containerships. The containerships account for only 5.88% of the cargo fleet. Yet, if the same calculations are applied to the tonnages the containerships account for 19.82% of the total general cargo fleet.[35] In actuality the containership share of total general cargo tonnage moved between foreign countries and Saudi Arabia is higher. This is because the freighters are inefficient relative to the containerships. Many freighters are not fully loaded when engaged in cargo-carrying voyages. Containerships on the other hand are currently operating at maximum capacity (Normann, 1983, p.c.). Freighters incur longer voyage times because of slower steaming speeds and longer port stays because of the method of cargo handling. Containerships are faster and normally spend less than one day in port. Freighters are smaller vessels with less available cargo space, having been designed in an earlier era when technology was different. Containerships are larger and specifically designed for maximum unitized cargo loads; they can carry up to three or four times as much as the freighter can.

Saudi Arabia's ocean-commerce shipping is basically subdivided into two fleets with different trade roles. The export fleet consists mainly of tankers (both oil and refined products), liquid gas carriers, chemical transporters, the T.V. Alkisma Alarabia when engaged in oil transport, and a small bulk carrier or two. Excluding the forty tankers

totalling more than 221,000 g.r.t. working at bunkering and depot storage, the remaining sixty tank vessels totalling some 2.96 million g.r.t. are engaged in petroleum export. With the ore/oil carrier included the export fleet consists of 61 ships totalling in excess of 3.11 million g.r.t..

The import fleet is predominantly made up of general cargo freighters, containerships, livestock carriers, ore/bulk carriers, and the T.V. Alkisma Alarabia when carrying ore. Summed up the import fleet consists of 138 ships totalling more than 1.07 million g.r.t..[36] With the ore/oil carrier added the import fleet consists of 139 ships totalling nearly 1.22 million g.r.t..

The ferry and passenger ship fleet is the only other vessel category of any consequence engaged in international trade. It was excluded from the above subdivisions of fleet roles since it is the only vessel category in continuous two-way trade. The ferries and passenger ships are both an import and export fleet. Their cargo is people, mostly Muslims on their pilgrimage to Mecca.

The other vessel categories comprising the Saudi fleet are not engaged in international trade and therefore are not discussed. In summary, of the total number of ships and tonnage constituting the Saudi ocean-commerce fleet, the import fleet has more than twice (69.5%) as many vessels as the export fleet (30.5%) but the export fleet has more than two and a half times (71.9%) the tonnage of the import fleet (28.1%).

An analysis of age and tonnage (Table 19) of the ships comprising the Saudi fleet indicates the following: 2.83% is less than five years old, 29.46% is five to nine years old, 42.59% is ten to fourteen years

old, 9.79% is fifteen to nineteen years old, 9.41% is twenty to twenty-four years old, 4.04% is twentyfive to twentynine years old, and 1.88% is thirty years old or older. An analysis of age and tonnage of tankers (Table 20) shows that: 0.14% are less than five years old, 37.35% are five to nine years old, 51.04% are ten to fourteen years old, 6.83% are fifteen to nineteen years old, 2.79% are twenty to twentyfour years old, 1.76% are twentyfive to twentynine years old, and 0.09% are thirty years old or older. In both cases only a little more than thirty percent were built after the oil crisis but more than eighty percent of the ships were acquired after 1974. The major reason that such a large percentage of the fleet predates the oil crisis is that the ships were built for companies of the western oil consuming nations when those nation's multinational oil companies dominated the economic structure of the world petroleum market. However, when the Saudis obtained control of the petroleum economy downstream activities such as the petroleum shipping and import transport markets were initiated by acquisition of ships. These ships were purchased secondhand from western shipping companies who had seen their fortunes change with the shift in "oil power" and from companies who purposely sold ships at exhorbitant prices for profit.

Tables 21, 22, and 23 are provided as ancillary information for those specifically interested in the subjects covered. A general observation is that nearly all the steamships and tankers (compare Tables 21 and 23), specifically tankers over 100,000 g.r.t., are turbine-driven.

Saudi Arabia has annual targets for increasing the shipping fleet. As Table 24 shows, Saudi Arabia realized its annual planned fleet increases only three times (1975, 1976, and 1980) and came close in 1981. Planned fleet increases show the effect of the downstream theory. The

statistics in Table 24 show two very vivid trends. One is the increase in magnitude of the planned fleet increases beginning with 1975. The proposed tonnage to be acquired jumps nine-fold in 1976, fluctuates in the hundreds of thousands through 1980, jumps more than two-fold into the millions in 1981, and for 1982 stood at more than 1.87 million g.r.t.. The second trend is the increase in tonnage actually acquired after key global disturbances in the petroleum market. Though the 1974 data is missing it is known that the percentage of planned growth realized exceeded one hundred percent. As seen in the table the percentage of planned growth realized in 1975 was nearly one thousand percent followed by more than one hundred percent in 1976. The reason for this was the economic boom immediately following the oil crisis when massive capital was available and all sorts of ambitious spending programs were instituted. The near three-fold realization of planned tonnage growth for 1980 resulted from the economic boom that followed the doubling of oil prices during the Iranian Revolution.[37] A final observation from Table 24 is the increase of Saudi Arabia's planned tonnage growth relative to the world's planned tonnage increases. Saudi planned tonnage growth accounts for 1.673% of the world's plans in 1982.

Major Shipping Lines

At present there are 58 shipping companies in Saudi Arabia (Seatrade Publications Ltd., 1983, 131). Table 15 lists them. The fifteen major ones will be examined briefly. A major shipping line, as defined here, is one possessing at minimum either four ships with total tonnage exceeding 70,000 g.r.t. or less than four but two or more with total tonnage exceeding 150,000 g.r.t. and is engaged in international commerce. Of the fifteen, thirteen are privately owned. The two

TABLE 15

SAUDI SHIPOWNING COMPANIES AS OF 1983.

| Shipowning league (vessels over 1,000 g.r.t.) | | | | | | |
|---|---|---|---|---|---|---|
| Position in 1983 | Shipowner | Number | g.r.t. | d.w.t. | Ave. age (years) | % share |
| 1 | * M. Pharaon Group (inc. Nat. Bunkering) | 11 | 907,174 | 1,775,822 | 13.4 | 17.57 |
| 2 | * AIMCO | 5 | 679,943 | 1,325,975 | 10.1 | 13.17 |
| 3 | * As-Safina | 7 | 553,775 | 1,096,628 | 9.6 | 10.72 |
| 4 | * SIPCA | 3 | 376,322 | 760,100 | 12.3 | 7.29 |
| 5 | * Orri Navigation | 27 | 269,293 | 368,145 | 21.8 | 5.21 |
| 6 | * Amar Line | 7 | 256,365 | 482,334 | 12.2 | 5.14 |
| 7 | * REDEC | 4 | 187,543 | 243,985 | 14.1 | 3.63 |
| 8 | * AMPTC | 2 | 182,931 | 335,257 | 8.4 | 3.54 |
| 9 | * UASC | 11 | 167,932 | 244,382 | 6.8 | 3.25 |
| 10 | * SASCO/AMOC | 8 | 149,476 | 298,967 | NA | NA |
| 11 | * NSCSA | 6 | 152,170 | 207,506 | 2.5 | NA |
| 12 | SARIN | 1 | 130,490 | 268,322 | 9.0 | 2.53 |
| 13 | * Arabian Maritime | 8 | 121,217 | 202,572 | 12.8 | 2.35 |
| 14 | * Petrostar Ltd. | 8 | 100,844 | 178,576 | 18.5 | 1.95 |
| 15 | * Arabian Bulk Trade | 4 | 96,950 | 166,583 | 12.6 | 1.88 |
| 16 | SAMARCO | 1 | 91,954 | 212,759 | 13.0 | 1.78 |
| 17 | Petromin Tankers | 3 | 75,232 | 121,438 | 6.0 | 1.46 |
| 18 | * Saudi Harvest | 7 | 73,306 | 106,101 | 15.9 | 1.42 |
| 19 | Oriental Commercial | 8 | 61,478 | 94,816 | 23.7 | 1.19 |
| 20 | Rolaco | 6 | 55,958 | 86,708 | 25.3 | 1.08 |
| 21 | Al-Sabah | 5 | 47,787 | 76,945 | 22.4 | 0.92 |
| 22 | Bamaoudah | 5 | 44,442 | 62,018 | 23.6 | 0.86 |
| 23 | Najd Maritime | 8 | 36,587 | 43,162 | 24.1 | 0.71 |
| 24 | Elhawi | 6 | 35,547 | 58,065 | 22.0 | 0.69 |
| 25 | Al Mukairish | 5 | 33,128 | 49,391 | 28.0 | 0.64 |
| 26 | Red Sea Saudi | 1 | 31,036 | 38,628 | 16.0 | 0.60 |
| 27 | Magid & Adil Trading | 3 | 30,823 | 36,328 | 18.8 | 0.58 |
| 28 | SLTTC | 1 | 29,600 | 43,500 | 10.0 | 0.57 |
| 29 | Bakri | 5 | 28,234 | 44,726 | 25.3 | 0.55 |
| 30 | Saudi Navigation | 1 | 22,626 | 38,927 | 10.0 | 0.44 |
| 31 | Abdullah Est. | 2 | 20,726 | 23,779 | 22.0 | 0.40 |
| 32 | Fayez Trading | 4 | 19,776 | NA | 19.3 | 0.38 |
| 33 | Shobokshi | 2 | 19,384 | 32,111 | 25.0 | 0.37 |
| 34 | S.C. Of S. Arabia | 3 | 19,098 | 23,008 | 20.9 | 0.37 |
| 35 | Star Navigation | 3 | 17,931 | 22,653 | 16.2 | 0.35 |
| 36 | Saudi Multina | 1 | 17,820 | 22,090 | 19.0 | 0.34 |
| 37 | Saudi Nav (Alamoudi) | 2 | 15,447 | 23,694 | 16.0 | 0.30 |
| 38 | Etaiwi | 2 | 14,563 | 17,267 | 24.9 | 0.28 |
| 39 | Mofarrij | 2 | 13,840 | 23,152 | 27.0 | 0.27 |
| 40 | Saudi Nav (YSD) | 3 | 11,967 | 16,450 | 14.7 | 0.23 |
| 41 | High Speed | 2 | 11,353 | 15,897 | 18.9 | 0.22 |
| 42 | Garafi | 1 | 10,199 | 12,723 | 20.0 | 0.20 |
| 43 | SMTC | 1 | 8,496 | NA | 17.0 | 0.16 |
| 44 | Saudi Lines | 2 | 7,883 | 4,268 | 24.6 | 0.15 |
| 45 | Nour Saudi | 1 | 6,794 | 9,100 | 17.0 | 0.13 |
| 46 | Amal Line | 2 | 6,618 | 9,265 | 23.6 | 0.13 |
| 47 | Asalimi Est. | 4 | 6,440 | 12,450 | 14.2 | 0.12 |
| 48 | Hitta Est. | 2 | 6,198 | 1,768 | 22.4 | 0.12 |
| 49 | Arabian Ferries | 2 | 5,199 | 4,316 | 11.6 | 0.10 |
| 50 | Bukhari | 1 | 3,960 | 4,783 | 25.0 | 0.08 |
| 51 | Sadaka | 2 | 3,558 | 4,912 | 35.0 | 0.07 |
| 52 | Al Amri | 1 | 2,153 | 3,463 | 14.0 | 0.04 |
| 53 | APSCO | 1 | 1,988 | 3,804 | 11.0 | 0.04 |
| 54 | Nashar Saudi | 1 | 1,568 | 997 | 23.0 | 0.03 |
| 55 | Transhipp | 1 | 1,362 | 3,421 | 10.0 | 0.03 |
| 56 | Al Shahoub | 1 | 1,074 | 1,717 | 25.0 | 0.03 |

Note: NA - data not available.
Note: An asterik (*) denotes the major companies discussed in the text.
Source: Seatrade Publications Ltd., 1983, 131. The author has modified the data.

state-owned ones, AMPTC and UASC, are the Pan-Arab joint ventures, and the accompanying figures show only the Saudi units of the two fleets.

The largest company is the M. Pharaon Group. Mazen R. Pharaon may be considered a Saudi version of the famous Greek shipping magnates but, of course, on a smaller scale. His company has interests in everything maritime ranging from shipowning, tanker operations, and chartering to

serving as shipping agents, ship chandlers, and bunkerers. There are sixteen affiliates and subsidiaries of the M. Pharaon Group. Five of his eleven ships are ULCCs in excess of 320,000 d.w.t..

The second largest is AIMCO, in terms of tonnage. This company is 49% owned by Mobil Tankers Company, S.A., a U.S. flag-of-convenience shipping subsidiary of MOBIL, in which Prince Abdulaziz owns 33% and two wealthy sheikhs the remaining 18%. It is mainly a tanker operator with two ULCCs, two VLCCs, and the ore/oil carrier. When the T.V. Alkisma Alarabia is employed as tanker it falls into the VLCC class. The company has two Liberian subsidiaries which are flag-of-convenience operations. The AIMCO controlled fleet is larger than the five Saudi-registered vessels.

As-Safina Company is the third largest. It is owned by Prince Abdulaziz and the Swedish company Salenrederierna. The company deals in petroleum transport and refrigerated cargoes. Two of its ships are ULCCs in excess of 350,000 d.w.t. and one is a VLCC. The other three are reefers (refrigerated vessels).

The fourth biggest is SIPCA with three VLCCs, all in excess of 250,000 d.w.t.. The company is 49% owned by TEXACO and 51% owned by the Saudi firm Aggad Investment Company. SIPCA deals in oil exportation to the U.S. eastcoast and Caribbean.

Though Orri Navigation Lines ranks fifth in tonnage, it is the largest in number of vessels with 27. Orri Navigation Lines is one of the oldest established shipping companies, dating back to 1956. It is one of the few wholly Saudi-owned shipping lines. This company is one of those that favor the general cargo freighter, probably due to the origin of Orri Navigation Lines in the era when freighters dominated the

maritime scene. An interesting aspect of this company is its formation of several subsidiaries which specifically oversee operations of vessels engaged in specific trade routes. Examples are Saudi Europa Line, Saudi India Navigation, Saudi Palm Navigation, Saudi Eagle Shipping, Saudi Falcon Navigation, Saudi Ambassador Shipping, and there are at least nine others. Of the 27 ships, 26 are freighters and the other one is a bulk carrier.

The Amar Line Maritime Company ranks sixth with three general cargo freighters, two oil and refined products tankers, a VLCC, and one chemical transporter. It is principally engaged in the export of oil, refined products, and petrochemicals and the importation of construction materials and equipment. This company is a subsidiary of Andweel Holdings, Incorporated.

REDEC is seventh with four cement carriers (bulk carriers). As far as is known it is a wholly Saudi-owned company. It deals in the import of cement, domestic (coastwise) transport, cement storage, and tiny amounts of export to adjacent countries.

Next is the government's two ships that partly constitute the fleet of the OAPEC company AMPTC. AMPTC was formed in 1972 as a joint venture between Algeria (13.56%), Iran (13.56%), Kuwait (13.56%), Libya (13.56%) Qatar (13.56%), Saudi Arabia (13.56%), the U.A.E. (13.56%), Bahrain (4.99%), and Egypt (~0.1%). Though AMPTC was intended to be economically viable, an additional purpose was to insure independence from foreign tanker companies. Infusions of massive subsidies have been needed to keep it operating. Three factors have specifically contributed to the company's poor performance. The startup of the company coincided with the beginning of the world tanker market depression that set in 1974.

The over capitalization of AMPTC gave it easy entry into the market when more prudent financial management would have dictated caution (Seatrade Publications Ltd., 1983, 81). Finally, internecine bickering among the members prevented unified guidance. The constant annual losses that ran into the tens of millions of dollars provoked an OAPEC ministerial investigation of AMPTC in 1980.

AMPTC is based in Kuwait. The fleet consists of ten ships totalling some 2.23 million d.w.t.. The two Saudi ships are a liquid gas carrier, the M.V. Al-Berry, and a VLCC, the T.V. Al-Riyadh. The future of AMPTC as a regional firm is bleak.

The Saudi state share of UASC's fleet tonnage ranks ninth on the list of major shipping companies. The UASC is another Pan-Arab joint venture among Bahrain, Iraq, Kuwait, Qatar, Saudi Arabia, and the U.A.E.. Designed by Kuwait, it formed in 1976 for the same reasons AMPTC was conceived -- to diminish dependence on foreign carriers and obtain a fair share of the import market. Unfortunately, the advent of the line was perceived to be political and it operated at a loss for four years before showing a profit in 1981.

The company is based in Kuwait. Currently the UASC fleet consists of 54 ships totalling nearly 833,000 g.r.t. (Seatrade Publications Ltd., 1983, 5). The Saudi vessels are eight combination break bulk/container vessels, two containerships, and one general cargo freighter. The company maintains liner service between the Arabian Peninsula and Europe, the U.S. eastcoast, and the Far East. In 1980 UASC transported 40% of all dry cargo imported into the Persian Gulf. The company's marketing strategy is to participate in the liner conferences on all major trade routes and simultaneously substantially increase their cargo liftings.

The tenth largest shipping company is SASCO/AMOC which owns seven bunkering tankers and one VLCC exceeding 270,000 d.w.t.. AMOC is an affiliate of SASCO that deals exclusively in bunkering tankers at Jiddah in addition to its own fleet at the other ports. Since AMOC is the agent for EXXON and SASCO is partly owned by Mitsui OSK, the SASCO/AMOC link assures the Saudi companies of continued business in the future.

NSCSA is the eleventh biggest because of the addition of four RO/ROs in 1983 (which are not included in the statistical tables). NSCSA is a wholly nationally-owned shipping line with the founding business executives owning 30%, the Saudi government owning 25%, and 13,600 Saudi shareholders owning the rest (NSCSA, 1982, 2). The line has just taken delivery of the four biggest RO/RO ships in the world, each with a capacity of 2,050 TEUs (NSCSA, 1982, 5; and personal observation). Currently, NSCSA is engaged in liner service between the east and gulf coasts of the U.S. and Saudi Arabia. Beginning in 1984 it will serve ports in Japan, South Korea, Taiwan, Hong Kong, and Singapore. NSCSA is a young company with an aggressive expansionist attitude.

The twelfth major one is Arabian Maritime Transport Company. It has five bulk carriers, two general cargo freighters, and one livestock carrier. The company is engaged in import. The company is affiliated with REDEC.

Petrostar Company, Ltd. is the thirteenth largest. The principal owners are A. Abbar and A. Zainy with the minority share held by unknown foreign owners. Five of the eight tankers are for bunkering service at Jiddah, Dammam, and Ras Tanura. The remaing three are engaged in export.

Arabian Bulk Trade Ltd. follows with four bulk carriers. The company is a subsidiary of Saudi Bulk Transport Company which is 37.5%

owned by the Norwegian company NORCEM and 67.5% owned by Haji Abdullah Alireza. The ships are mostly engaged in the importation of cement to Saudi Arabia.

Last on the list is Saudi Harvest Maritime Company, Ltd.. Though the owners are not specifically known, the minority share is held by Hong Kong interests. The line is engaged in liner operations between the Arab ports of Jiddah and Aqaba and the Far East ports of Hong Kong, Singapore, and Taipei. All seven vessels are general cargo freighters.

Ownership

By law all Saudi shipping companies must be at least 51% owned by Saudi nationals. However, there are large foreign investments in Saudi shipping companies. The impetus for the large number of foreign partners is derived from the strengthning resolve and ability of the Saudis to control all aspects of their economy. Since the prevailing philosophy is to have nationals controlling trade by owning a fair portion of the transportation sector, foreign shipowners can only participate if they set up joint ventures or buy into Saudi shipping firms. They then share proportionally in both the losses and profits of the Saudi shipping company. The Saudis welcome this since the foreign partner is forced to lend its expertise to the operation, transfer technology, work with and instruct their Saudi partners, and adopt a Saudi-oriented outlook on trade and transport. Enticing foreign partners are the Saudi free market economy, the bunker subsidy, and relaxed standards pertaining to registration and manning (Seatrade Publications Ltd., 1982, 129).

However, there is growing criticism that many Saudi shipping companies are nothing more than flag-of-convenience operations (OECD, 1981) In other words, they are merely pseudo joint ventures under the Saudi

flag (Seatrade Publications Ltd., 1983, 129). The Saudis counter that the 51% ownership requirement nullifies the idea that they are a flag-of-convenience country. Supporting the accusation are the many shipping companies that have been organized but have no ships. Not by coincidence, they charter their foreign partner's vessels.

In addition, many of the foreign companies participating in the Saudi joint ventures also have direct flag-of-convenience subsidiaries. Once again, and not by coincidence, close relationships develop between the Saudi joint venture company and the flag-of-convenience subsidiary. The principal country where these particular relationships are visible is Liberia. The Liberian subsidiaries of AIMCO and SAMARCO are also subsidiaries or affiliates of their respective foreign partners.

Nations represented in the Saudi joint ventures include the United States, Japan, Sweden, Norway, Greece, Thailand, Italy, Spain, Hong Kong, Bermuda, and Bahrain.[38] Naturally enough, these same countries are either major importers of petroleum, exporters of the commodities Saudi Arabia needs, or major shipping nations.

Trade Participation

Saudi ships are seen on nearly every trade route in every ocean. However, they do not cross the Pacific on a regular or significant basis. They operate both as tramps and liners depending on the vessel type, contract, and demand. Companies such as NSCSA, Orri Navigation Lines, and UASC provide regular liner service between Saudi Arabia and the U.S. east and gulf coasts, northern Europe, the Mediterranean, East Africa, South Asia, and the Far East. The nature of tankers and bulk carriers preclude them from technically being in liner operations, but through charters and long-term contracts they operate in a similar fashion.

The Saudi fleet is nearly fully employed. However, that does not mean that it is engaged in the most efficient revenue-generating manner. In 1979 only two vessels, a dry cargo ship and a tanker, totalling about 40,000 g.r.t. were laid-up (Fairplay, 1980, 670). Together they amounted to only 2.77% of the Saudi fleet tonnage, which was remarkable considering the depressed shipping market and Saudi inexperience.

The Arab countries account for 16% of world seaborne trade and export 49% of world tanker cargoes (Al-Jadir, 1982, 13). Saudi Arabia accounts for the largest share, particularly in petroleum exports. However, the Saudi fleet as a whole accounts for only 1.012% of the world fleet (Table 17, column H). The Saudi tankship fleet tonnage accounts for only 1.661% of the world tankship fleet (calculated from Table 18).[39] Apparently, the prevailing notion among developing nations is to have a percentage of the world fleet equal to the percentage of total seaborne trade they generate (Al-Jadir, 1982, 19; Abu-Khadra, 1982, 17; Al-Diwani, 1983, 17). Saudi Arabia clearly has some catching up to do.

The long-term objective of the Kingdom is to retain 40% of its seaborne trade (Al-Turki, 1983, 23). In the past Saudi ships have carried only 1.5% of their imports (NSCSA, 1982, 4). In exports they currently transport 11% though in the late 1970s it was only 5% (Isaak, 1984, p.c.). Using Abu-Khadra's calculations (1982, 17) for predicting national tanker tonnage based on petroleum exports indicates the Saudi tankship fleet should total about 25.36 million d.w.t..[40] Currently, the Saudi tankship fleet totals approximately 6.12 million d.w.t. or 24.12% of what it should be.[41] The Saudi tankship fleet is currently incapable of transporting forty percent of the Kingdom's exports. It is some 19.24 million d.w.t. short of capacity.

## V. THE NEXT TEN YEARS

An indepth quantitative forecast of Saudi fleet development is not possible because of the unpredictability of future policy, sporadic growth which does not provide a good trendline, and the restructuring of the fleet in the past few years. A review of Table 17 shows that though the Saudi fleet has increased in size, the annual growth rates fluctuated radically. If one takes an average of the growth rates and postulates that the tonnage additions of the last two years will be maintained, then the prediction is for an awesome escalation which would make the fleet the biggest in the world within ten years. That is improbable, and the future size of the Saudi fleet is unquantifiable. What follows is a qualitative prediction loosely based on some of the above criteria, together with other determinants such as national policy, industrialization, and traded commodities.

The next ten years promise continued growth and diversification of the Saudi fleet. However, the high growth rate experienced in the late 1970s and early 1980s will be curtailed. Unless a cargo reservation law is enacted or the UNCTAD 40:40:20 proposal ratified so that demand for more Saudi ships is created, it would be surprising if the end-year statistics for 1987 showed as much as a doubling of the fleet. Rather, consolidation of the fleet's position will occur. Many of the older vessels that Saudi Arabia acquired secondhand will be decommissioned. This will be because they have reached the end of their useful lives or have become unsuitable for modern trade due to changes in the traded commodities. Specific examples would be the crude oil tankers and general cargo freighters. As the downstream petroleum activities continue, more refined products and petrochemicals will be exported which those

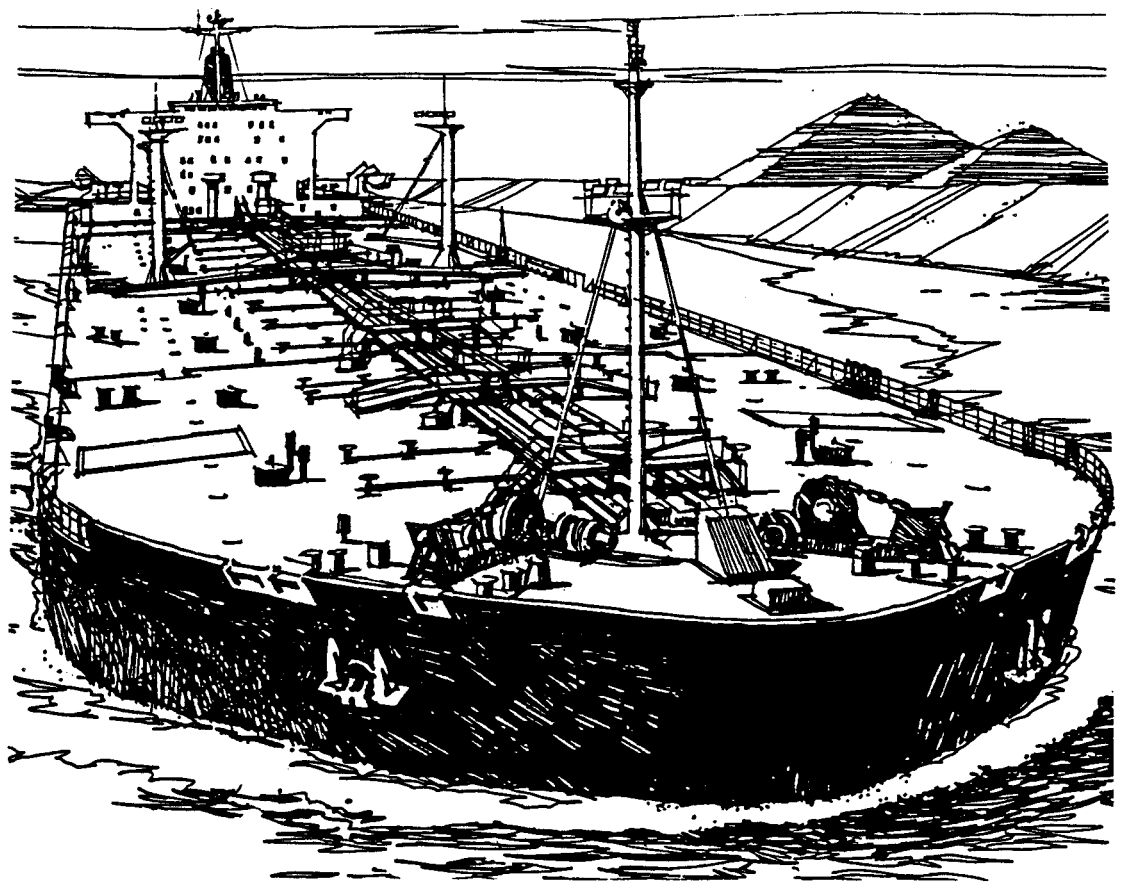
tankers cannot carry. The developments in the industrial base are such that Saudi Arabia can process and manufacture some commodities within the country. Commensurately, there is a shift in imports from finished goods to raw materials (E.I.U.S., 1981, No. 4). This affects the vessel types used. The general cargo freighters will begin to decrease in numbers as new modern ships are built.

The net effect will be a replacement by new ships specifically built for Saudi seaborne trade. However, since new ships are generally larger than their predecessors except in the case of VLCCs and ULCCs, the total g.r.t. of the fleet will rise by about two to two and a half million g.r.t. during the next five years. By 1990 or 1991 the Saudi fleet tonnage should be double what it is now.

The principal vessel types that will become more prominent will be the RO/RO ships, containerships, liquid gas carriers, and chemical tankers. Since January 1980 long-term contracts for liquid gas exports totalling more than 46.9 million barrels have been signed with Japan, Bermuda, and the U.K. (E.I.U.S., various years). The poor agricultural capability of the country will lead to further acquisition of grain carriers and livestock carriers. Contracts were recently signed with Uruguay and Australia for the import of frozen lamb totalling 21,000 tons (E.I.U.S., 1981, No. 3).

The Third Five-Year Development Plan (1981--1985) predicts that trade will grow at an annual compounded rate of 8.42% for GDP and 6.5% for productivity based on 1980 prices (E.I.U.S., 1981, No. 1). It is my prediction that the percent of trade carried by Saudi ships will increase to twenty percent for imports and thirty percent for exports by 1987, based on today's petroleum and shipping markets. By 1990 it is

quite conceivable that Saudi ships will carry forty percent of their overall trade, barring unforeseen disturbances in the petroleum market, changes in policies concerning joint ventures, or adoption of flag-of-convenience operations. The majority of ships will still be crewed by expatriates or foreigners. Saudi Arabia has the potential to become a powerful maritime nation like Greece or Norway and seapower as in Mahan's and Craven's concept of a sea-oriented society. While its policies have not always been the most appropriate, the magnitude of the economy and its impact on every aspect of life is forcing the Saudi fleet to grow.



# APPENDIX A.

# STATISTICS ON THE STRUCTURE OF THE SAUDI FLEET

TABLE 16

STATISTICAL SUMMARY OF THE SAUDI MERCHANT FLEET
FOR THE PERIOD 1952 THROUGH 1967.

| Year | Total number and tonnage (both in gross registered tons and dead-weight tons of Saudi merchant fleet. | | | Total number and tonnage (both in gross registered tons and dead-weight tons of Saudi oil tanker fleet. | | | Total number and tonnage (both in gross registered tons and dead-weight tons of Saudi freighter fleet. | | | Total number and tonnage (both in gross registered tons and dead-weight tons of Saudi bulk carrier fleet. | | | Total number and tonnage (both in gross registered tons and dead-weight tons of Saudi passenger/ cargo fleet. | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (#) | (g.r.t.) | (d.w.t.) | (#) | (g.r.t.) | (d.w.t.) | (#) | (g.r.t.) | (d.w.t.) | (#) | (g.r.t.) | (d.w.t.) | (#) | (g.r.t.) | (d.w.t.) |
| 1952 | 1 | 1,500 | 2,000 | 0 | 0 | 0 | 1 | 1,500 | 2,000 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1960 | 8 | 13,000 | 17,000 | 0 | 0 | 0 | 5 | 8,000 | 12,000 | 2 | 4,000 | 4,000 | 1 | 1,000 | 1,000 |
| 1961 | 8 | 13,000 | 17,000 | 0 | 0 | 0 | 5 | 8,000 | 12,000 | 2 | 4,000 | 4,000 | 1 | 1,000 | 1,000 |
| 1962 | 12 | 33,000 | 48,000 | 1 | 9,000 | 13,000 | 8 | 20,000 | 30,000 | 2 | 3,000 | 4,000 | 1 | 1,000 | 1,000 |
| 1963 | 11 | 32,000 | 46,000 | 1 | 9,000 | 13,000 | 7 | 18,000 | 28,000 | 2 | 4,000 | 4,000 | 1 | 1,000 | 1,000 |
| 1964 | 11 | 38,000 | 52,000 | 1 | 9,000 | 13,000 | 6 | 16,000 | 25,000 | 2 | 3,000 | 4,000 | 2 | 10,000 | 10,000 |
| 1965 | 10 | 29,000 | 39,000 | 0 | 0 | 0 | 6 | 16,000 | 25,000 | 2 | 3,000 | 4,000 | 2 | 10,000 | 10,000 |
| 1966 | 10 | 30,000 | 39,000 | 0 | 0 | 0 | 6 | 16,000 | 25,000 | 2 | 4,000 | 4,000 | 2 | 10,000 | 10,000 |
| 1967 | 13 | 42,000 | 49,000 | 0 | 0 | 0 | 7 | 18,000 | 28,000 | 2 | 4,000 | 4,000 | 4 | 20,000 | 17,000 |

Note: This statistical table includes all vessels over 1,000 g.r.t.. It does not include ice breakers, cable ships, channel ships, and merchant ships owned by the military.

Source: U.S. Department of Commerce, Maritime Administration (various years).

TABLE 17

STATISTICAL SUMMARY OF THE SAUDI MERCHANT FLEET AND COMPARISON TO THE WORLD FLEET FOR THE PERIOD 1968 THROUGH 1982.

| Year | Total number and tonnage of Saudi steamship fleet. (Column A) | | Total number and tonnage of Saudi motorship fleet. (Column B) | | Total number and tonnage of entire Saudi merchant fleet. (Column C) | | Total deadweight tonnage of entire Saudi merchant fleet. (Column D) | Total number and tonnage of world merchant fleet (includes Saudi merchant fleet). (Column E) | | Total deadweight tonnage of world merchant fleet. (Column F) |
|---|---|---|---|---|---|---|---|---|---|---|
| | (#) | (g.r.t.) | (#) | (g.r.t.) | (#) | (g.r.t.) | (d.w.t.) | (#) | (g.r.t.) | (d.w.t.) |
| 1968 | 5 | 3,732 | 34 | 45,893 | 39 | 49,625 | NA | 47,444 | 194,152,378 | NA |
| 1969 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 1970 | 2 | 1,661 | 35 | 46,882 | 37 | 48,543 | 50,800 | 52,444 | 227,489,864 | 338,838,789 |
| 1971 | 3 | 18,347 | 30 | 27,145 | 33 | 45,492 | 59,207 | 55,041 | 247,202,634 | 376,212,695 |
| 1972 | 3 | 18,347 | 32 | 32,022 | 35 | 50,369 | 65,576 | 57,391 | 268,340,145 | 414,058,971 |
| 1973 | 3 | 18,347 | 40 | 40,183 | 43 | 58,530 | 79,491 | 59,606 | 289,926,686 | 452,472,055 |
| 1974 | 3 | 18,347 | 40 | 42,928 | 43 | 61,275 | 83,241 | 61,194 | 311,322,626 | 493,986,761 |
| 1975 | 3 | 18,347 | 52 | 161,899 | 55 | 180,246 | 280,551 | 63,724 | 342,162,363 | 553,378,627 |
| 1976 | 6 | 213,398 | 78 | 375,347 | 84 | 588,745 | 974,670 | 65,887 | 371,999,926 | 608,337,185 |
| 1977 | 11 | 564,066 | 108 | 454,647 | 119 | 1,018,713 | 1,739,408 | 67,945 | 393,678,369 | 648,842,904 |
| 1978 | 15 | 837,419 | 139 | 408,693 | 154 | 1,246,112 | 2,145,388 | 69,020 | 406,001,979 | 670,418,751 |
| 1979 | 15 | 834,743 | 157 | 608,209 | 172 | 1,442,952 | 2,448,563 | 71,129 | 413,021,426 | 681,489,737 |
| 1980 | 16 | 890,176 | 198 | 699,492 | 214 | 1,589,668 | 2,652,573 | 73,832 | 419,910,651 | 690,854,983 |
| 1981 | 23 | 1,751,400 | 263 | 1,370,421 | 286 | 3,121,821 | 5,515,601 | 73,864 | 420,834,813 | 697,188,113 |
| 1982 | 30 | 2,716,985 | 317 | 1,584,804 | 347 | 4,301,789 | 7,768,780 | 75,151 | 424,741,682 | 701,979,762 |

Note: NA - data not available.

Source: Lloyd's Register of Shipping Statistical Tables (various years).

TABLE 17 (Continued)

STATISTICAL SUMMARY OF THE SAUDI MERCHANT FLEET AND COMPARISON TO THE WORLD FLEET FOR THE PERIOD 1968 THROUGH 1982.

| Year | Percent (%) relationship of number of vessels in Saudi merchant fleet to total world fleet. (Column G) | Percent (%) relationship of total g.r.t. of Saudi merchant fleet to total world g.r.t. (Column H) | Percent (%) relationship of total d.w.t. of Saudi merchant fleet to total world d.w.t. (Column I) | Numerical ranking of Saudi fleet in relation to all other merchant fleets in the world as defined by total g.r.t.s (size) of others. (Column J) | Annual g.r.t. differences of Saudi fleet over prior year (total g.r.t. increased or decreased). (Column K) | Percent (%) change of g.r.t. of fleet over prior year based on prior year's total g.r.t. (Column L) | True annual percent (%) change in g.r.t. of fleet over prior year based on ratio relationship of change to new g.r.t. total. (Column M) | Running column of overall percent (%) increase of g.r.t. of Saudi fleet yearly since 1968. (Column N) |
|---|---|---|---|---|---|---|---|---|
| 1968 | 0.082% | 0.025% | NA | 67th | NA | NA | NA | NA |
| 1969 | NA | NA | NA | NA | NA | NA | NA | NA |
| 1970 | 0.071% | 0.021% | 0.015% | 69th | NA | NA | NA | - 2.180% |
| 1971 | 0.060% | 0.018% | 0.015% | 83rd | - 3,051 | - 6.285% | - 6.706% | - 8.328% |
| 1972 | 0.061% | 0.018% | 0.015% | 74th | + 4,877 | + 10.720% | + 9.682% | + 101.499% |
| 1973 | 0.072% | 0.020% | 0.017% | 74th | + 8,161 | + 16.202% | + 13.943% | + 117.944% |
| 1974 | 0.070% | 0.019% | 0.016% | 73rd | + 2,745 | + 4.690% | + 4.479% | + 123.476% |
| 1975 | 0.086% | 0.052% | 0.050% | 61st | + 118,971 | + 194.216% | + 66.004% | + 363.216% |
| 1976 | 0.127% | 0.158% | 0.160% | 44th | + 408,499 | + 226.634% | + 69.384% | + 1,186.388% |
| 1977 | 0.175% | 0.258% | 0.268% | 40th | + 429,968 | + 73.031% | + 42.206% | + 2,052.822% |
| 1978 | 0.223% | 0.307% | 0.320% | 38th | + 227,399 | + 22.322% | + 18.248% | + 2,511.057% |
| 1979 | 0.242% | 0.349% | 0.359% | 36th | + 196,840 | + 15.796% | + 13.641% | + 2,907.711% |
| 1980 | 0.290% | 0.378% | 0.384% | 35th | + 146,716 | + 10.167% | + 9.229% | + 3,203.361% |
| 1981 | 0.387% | 0.741% | 0.791% | 23rd | + 1,532,153 | + 96.381% | + 49.078% | + 6,290.823% |
| 1982 | 0.461% | 1.012% | 1.106% | 20th | + 1,179,968 | + 37.797% | + 27.429% | + 8,668.592% |

Note: NA - data not available.

Note: All figures above were calculated by the author.

TABLE 18. -- STATISTICAL ANALYSIS OF THE VARIOUS TYPES OF VESSELS COMPRISING THE SAUDI MERCHANT FLEET AND COMPARISON TO THE RESPECTIVE CATEGORIES IN THE WORLD FLEET FOR THE PERIOD 1968 THROUGH 1982.

| Year | Total number and tonnage (both in gross registered tons and deadweight tons) of Saudi oil tanker fleet. (Column A) | | | Total number and tonnage (both in gross registered tons and deadweight tons) of the world oil tanker fleet (includes the Saudi oil tanker fleet). (Column B) | | | Total number and gross registered tonnage of Saudi liquid gas carrier (LNG) fleet. (Column C) | | Total number and gross registered tonnage of world liquid gas carrier (LNG) fleet. (Column D) | | Total number and gross registered tonnage of Saudi chemical tanker fleet. (Column E) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (#) | (g.r.t.) | (d.w.t.) | (#) | (g.r.t.) | (d.w.t.) | (#) | (g.r.t.) | (#) | (g.r.t.) | (#) | (g.r.t.) |
| 1968 | 0 | 0 | 0 | 5,644 | 69,213,950 | NA | 0 | 0 | NA | NA | 0 | 0 |
| 1969 | 0 | 0 | 0 | NA | NA | NA | 0 | 0 | NA | NA | 0 | 0 |
| 1970 | 0 | 0 | 0 | 6,103 | 86,139,853 | 143,547,042 | 0 | 0 | 288 | 1,349,605 | 0 | 0 |
| 1971 | 2 | 17,098 | 27,975 | 6,292 | 96,141,475 | 169,354,743 | 0 | 0 | 327 | 1,622,171 | 0 | 0 |
| 1972 | 2 | 17,098 | 27,975 | 6,462 | 105,128,937 | 188,415,732 | 0 | 0 | 349 | 1,887,145 | 0 | 0 |
| 1973 | 2 | 17,098 | 27,975 | 6,607 | 115,365,200 | 209,703,273 | 0 | 0 | 374 | 2,276,080 | 0 | 0 |
| 1974 | 4 | 19,528 | 31,744 | 6,785 | 129,491,446 | 238,399,602 | 0 | 0 | 399 | 2,414,843 | 0 | 0 |
| 1975 | 9 | 118,927 | 214,238 | 7,024 | 150,057,269 | 281,596,987 | 0 | 0 | 421 | 2,998,953 | 0 | 0 |
| 1976 | 21 | 456,200 | 825,273 | 7,020 | 168,160,516 | 319,967,551 | 0 | 0 | 433 | 3,337,066 | 0 | 0 |
| 1977 | 34 | 859,216 | 1,578,131 | 6,912 | 174,124,444 | 335,254,710 | 0 | 0 | 493 | 4,410,727 | 0 | 0 |
| 1978 | 47 | 1,021,656 | 1,892,842 | 6,882 | 175,035,102 | 339,060,670 | 0 | 0 | 536 | 5,529,622 | 0 | 0 |
| 1979 | 56 | 1,062,793 | 1,982,268 | 6,950 | 174,213,276 | 338,277,822 | 2 | 66,309 | 580 | 6,676,456 | 0 | 0 |
| 1980 | 64 | 1,125,539 | 2,096,944 | 7,112 | 175,004,403 | 339,801,719 | 2 | 66,309 | 631 | 7,393,167 | 1 | 4,474 |
| 1981 | 82 | 2,261,678 | 4,393,360 | 6,986 | 171,696,852 | 335,464,423 | 2 | 66,309 | 678 | 7,958,680 | 4 | 6,997 |
| 1982 | 94 | 2,892,932 | 5,745,811 | 7,021 | 166,828,416 | 325,242,736 | 2 | 66,309 | 722 | 8,785,230 | 4 | 6,997 |

Source: Table 2 is constructed according to the classification system used by Lloyd's of London in their annual statistical publication on shipping. This table is not a complete list of all the vessels Saudi Arabia may have. It includes only those vessels over 100 g.r.t. which are required by international law to be insured and which constitute the prominent portion of Saudi Arabia's merchant fleet. While Table 2 omits certain vessels, it still provides an accurate picture of the Saudi fleet, particularly the ocean fleet.

TABLE 18. (Continued) STATISTICAL ANALYSIS OF THE VARIOUS TYPES OF VESSELS COMPRISING THE SAUDI MERCHANT FLEET AND COMPARISON TO THE RESPECTIVE CATEGORIES IN THE WORLD FLEET FOR THE PERIOD 1968 THROUGH 1982.

| Year | Total number and gross registered tonnage of world chemical tanker fleet. (Column F) | | Total number and g.r.t. of Saudi combination ore/bulk carrier fleet. (Column G) | | Total number and g.r.t. of world combination ore/bulk carrier fleet. (Column H) | | Total number and g.r.t. of Saudi combination ore/oil and bulk/oil carriers. (Column I) | | Total number and gross registered tonnage of world combination ore/oil and bulk/oil carrier fleet. (Column J) | | Total number and g.r.t. of saudi single-deck general cargo fleet. (Column K) | | Total number and g.r.t. of Saudi multi-deck general cargo fleet. (Column L) | | Total number and gross registered tonnage of Saudi combination passenger/cargo fleet. (Column M) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (#) | (g.r.t.) | (#) | (g.r.t.) | (#) | (g.r.t.) | (#) | (g.r.t.) | (#) | (g.r.t.) | (#) | (g.r.t.) | (#) | (g.r.t.) | (#) | (g.r.t.) |
| 1968 | NA | NA | 0 | 0 | 2,067 | 34,874,281 | 0 | 0 | NA | NA | NA | NA | NA | NA | NA | NA |
| 1969 | NA | NA | 0 | 0 | NA | NA | 0 | 0 | NA | NA | NA | NA | NA | NA | NA | NA |
| 1970 | 216 | 450,531 | 0 | 0 | 2,321 | 38,334,465 | 0 | 0 | 207 | 8,317,290 | --data combined: 24 ships @ 36,707 g.r.t.-- | | | | | |
| 1971 | 227 | 556,778 | 0 | 0 | 2,520 | 43,124,110 | 0 | 0 | 240 | 10,672,516 | --data combined: 19 ships @ 25,438 g.r.t.-- | | | | | |
| 1972 | 233 | 551,163 | 0 | 0 | 2,754 | 48,414,552 | 0 | 0 | 294 | 15,073,353 | --data combined: 20 ships @ 29,644 g.r.t.-- | | | | | |
| 1973 | 250 | 652,347 | 0 | 0 | 2,954 | 53,109,628 | 0 | 0 | 349 | 19,538,746 | --data combined: 23 ships @ 36,992 g.r.t.-- | | | | | |
| 1974 | 291 | 748,139 | 0 | 0 | 3,111 | 57,403,390 | 0 | 0 | 380 | 22,034,582 | --data combined: 22 ships @ 37,816 g.r.t.-- | | | | | |
| 1975 | 341 | 966,792 | 0 | 0 | 3,308 | 61,831,797 | 0 | 0 | 403 | 23,715,812 | --data combined: 26 ships @ 40,300 g.r.t.-- | | | | | |
| 1976 | 395 | 1,274,464 | 0 | 0 | 3,513 | 66,714,290 | 0 | 0 | 419 | 25,023,290 | --data combined: 39 ships @ 104,848 g.r.t.- | | | | | |
| 1977 | 492 | 1,775,050 | 0 | 0 | 3,887 | 74,832,253 | 0 | 0 | 426 | 26,089,373 | 12 | 8,305 | 30 | 96,840 | 2 | 7,987 |
| 1978 | 527 | 1,929,967 | 2 | 64,418 | 4,130 | 80,172,731 | 0 | 0 | 427 | 26,371,891 | 14 | 13,626 | 29 | 91,988 | 2 | 9,336 |
| 1979 | 596 | 2,078,842 | 2 | 64,418 | 4,208 | 81,827,260 | 1 | 54,736 | 430 | 26,496,001 | 13 | 13,020 | 31 | 120,079 | 2 | 9,336 |
| 1980 | 649 | 2,248,949 | 1 | 8,794 | 4,282 | 83,354,613 | 0 | 0 | 424 | 26,241,499 | 16 | 12,437 | 42 | 167,489 | 2 | 9,336 |
| 1981 | 716 | 2,613,683 | 2 | 33,901 | 4,320 | 87,245,946 | 0 | 0 | 416 | 25,837,847 | 16 | 11,708 | 76 | 474,759 | 2 | 9,335 |
| 1982 | 774 | 2,963,886 | 9 | 167,662 | 4,529 | 93,268,040 | 1 | 143,959 | 418 | 26,030,013 | 18 | 16,701 | 92 | 650,395 | 2 | 9,335 |

Note: NA - data not available.
Source: Lloyd's Register of Shipping Statistical Tables.

TABLE 18. (Continued) STATISTICAL ANALYSIS OF THE VARIOUS TYPES OF VESSELS COMPRISING THE SAUDI MERCHANT FLEET AND COMPARISON TO THE RESPECTIVE CATEGORIES IN THE WORLD FLEET FOR THE PERIOD 1968 THROUGH 1982.

| Year | Total number and gross registered tonnage of world single-deck general cargo fleet. (Column N) | | Total number and gross registered tonnage of world multi-deck general cargo fleet. (Column O) | | Total number and gross registered tonnage of world combination passenger/cargo fleet. (Column P) | | Total number and g.r.t. of Saudi containership fleet. (Column Q) | | Total number and g.r.t. of world containership fleet. (Column R) | | Total number and g.r.t. of Saudi trawler and fishing vessel fleet. (Column S) | | Total number and gross registered tonnage of world trawler and fishing vessel fleet. (Column T) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (#) | (g.r.t.) | (#) | (g.r.t.) | (#) | (g.r.t.) | (#) | (g.r.t.) | (#) | (g.r.t.) | (#) | (g.r.t.) | (#) | (g.r.t.) |
| 1968 | NA | NA | NA | NA | NA | NA | 0 | 0 | NA | NA | 0 | 0 | NA | NA |
| 1969 | NA | NA | NA | NA | NA | NA | 0 | 0 | NA | NA | 0 | 0 | NA | NA |
| 1970 | -data combined: 22,366 ships @ 72,396,359 g.r.t.- | | | | | | 0 | 0 | 167 | 1,907,801 | 0 | 0 | 12,889 | 7,803,612 |
| 1971 | -data combined: 22,023 ships @ 71,930,612 g.r.t.- | | | | | | 0 | 0 | 231 | 2,780,681 | 0 | 0 | 14,468 | 9,036,558 |
| 1972 | -data combined: 21,884 ships @ 71,137,957 g.r.t.- | | | | | | 0 | 0 | 312 | 4,309,530 | 0 | 0 | 15,098 | 6,505,502 |
| 1973 | -data combined: 21,629 ships @ 70,079,604 g.r.t.- | | | | | | 0 | 0 | 394 | 5,898,763 | 1 | 113 | 16,374 | 6,992,694 |
| 1974 | -data combined: 21,327 ships @ 69,055,600 g.r.t.- | | | | | | 0 | 0 | 412 | 6,291,404 | 1 | 113 | 17,262 | 7,334,359 |
| 1975 | -data combined: 21,560 ships @ 70,828,095 g.r.t.- | | | | | | 0 | 0 | 419 | 6,244,213 | 1 | 113 | 18,217 | 7,830,244 |
| 1976 | -data combined: 21,921 ships @ 74,060,892 g.r.t.- | | | | | | 0 | 0 | 443 | 6,685,382 | 1 | 113 | 18,923 | 8,241,085 |
| 1977 | 10,671 | 16,798,598 | 11,010 | 58,452,620 | 380 | 1,836,782 | 0 | 0 | 507 | 7,543,242 | 2 | 364 | 19,178 | 8,626,375 |
| 1978 | 10,630 | 17,600,816 | 11,371 | 60,356,740 | 367 | 1,717,115 | 0 | 0 | 531 | 8,674,055 | 2 | 364 | 19,198 | 8,797,000 |
| 1979 | 10,811 | 18,776,542 | 11,596 | 61,440,974 | 337 | 1,460,028 | 0 | 0 | 594 | 9,995,812 | 2 | 364 | 19,609 | 8,891,271 |
| 1980 | 10,975 | 18,889,489 | 11,701 | 62,405,065 | 319 | 1,315,679 | 0 | 0 | 662 | 11,274,078 | 2 | 364 | 20,671 | 9,195,225 |
| 1981 | 10,950 | 19,464,550 | 11,228 | 60,108,027 | 260 | 1,253,373 | 1 | 20,658 | 707 | 12,291,929 | 2 | 364 | 20,937 | 9,265,473 |
| 1982 | 11,005 | 19,579,023 | 11,237 | 59,898,492 | 245 | 1,064,225 | 2 | 34,706 | 718 | 12,941,690 | 6 | 1,108 | 21,081 | 9,363,785 |

Note: NA - data not available.
Source: Lloyd's Register of Shipping Statistical Tables.

TABLE 18. (Continued) STATISTICAL ANALYSIS OF THE VARIOUS TYPES OF VESSELS COMPRISING THE SAUDI MERCHANT FLEET AND COMPARISON TO THE RESPECTIVE CATEGORIES IN THE WORLD FLEET FOR THE PERIOD 1968 THROUGH 1982.

| Year | Total number and g.r.t. of Saudi ferry and passenger ship fleet. (Column U) | | Total number and g.r.t. of world ferry and passenger ship fleet. (Column V) | | Total number and g.r.t. of Saudi supply ship and tender fleet. (Column W) | | Total number and g.r.t. of world supply ship and tender fleet. (Column X) | | Total number and g.r.t. of Saudi tugboat and towboat fleet. (Column Y) | | Total number and g.r.t. of world tugboat and towboat fleet. (Column Z) | | Total number and g.r.t. of Saudi livestock carrier fleet. (Column AA) | | Total number and g.r.t. of world livestock carrier fleet. (Column BB) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (#) | (g.r.t.) | (#) | (g.r.t.) | (#) | (g.r.t.) | (#) | (g.r.t.) | (#) | (g.r.t.) | (#) | (g.r.t.) | (#) | (g.r.t.) | (#) | (g.r.t.) |
| 1968 | 0 | 0 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | 0 | 0 | NA | NA |
| 1969 | 0 | 0 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | 0 | 0 | NA | NA |
| 1970 | 0 | 0 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | 0 | 0 | NA | NA |
| 1971 | 0 | 0 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | 0 | 0 | NA | NA |
| 1972 | 0 | 0 | 2,292 | 6,838,433 | 2 | 867 | 758 | 450,806 | 11 | 2,760 | 3,963 | 1,031,884 | 0 | 0 | 41 | 74,581 |
| 1973 | 0 | 0 | 2,483 | 7,190,584 | 2 | 867 | 898 | 510,130 | 15 | 3,460 | 4,174 | 1,087,216 | 0 | 0 | 43 | 75,790 |
| 1974 | 0 | 0 | 2,589 | 7,192,902 | 1 | 358 | 1,029 | 583,609 | 15 | 3,460 | 4,334 | 1,115,248 | 0 | 0 | 45 | 83,605 |
| 1975 | 1 | 5,308 | 2,710 | 7,420,750 | 1 | 358 | 1,221 | 708,244 | 14 | 3,675 | 4,611 | 1,190,978 | 1 | 3,152 | 50 | 106,218 |
| 1976 | 2 | 10,592 | 2,792 | 7,502,731 | 3 | 1,308 | 1,417 | 819,089 | 15 | 4,119 | 4,943 | 1,293,533 | 1 | 3,152 | 54 | 106,320 |
| 1977 | 4 | 17,368 | 2,903 | 7,091,020 | 7 | 11,525 | 1,057 | 699,047 | 18 | 4,743 | 5,816 | 1,730,642 | 2 | 4,720 | 65 | 177,137 |
| 1978 | 5 | 17,667 | 2,960 | 6,864,290 | 4 | 9,370 | 1,160 | 1,000,877 | 38 | 7,782 | 5,970 | 1,774,932 | 2 | 4,720 | 74 | 214,317 |
| 1979 | 7 | 23,969 | 3,152 | 7,249,694 | 6 | 10,327 | 1,313 | 1,104,412 | 39 | 7,969 | 6,218 | 1,850,060 | 1 | 1,568 | 83 | 311,394 |
| 1980 | 10 | 40,736 | 3,355 | 7,597,415 | 17 | 17,948 | 1,438 | 1,127,177 | 41 | 8,369 | 6,489 | 1,945,363 | 2 | 8,769 | 78 | 275,734 |
| 1981 | 11 | 44,725 | 3,440 | 7,497,284 | 18 | 15,830 | 1,536 | 1,121,427 | 43 | 9,999 | 6,637 | 1,991,387 | 7 | 45,940 | 85 | 349,633 |
| 1982 | 10 | 40,304 | 3,526 | 7,684,483 | 20 | 16,900 | 1,687 | 1,276,423 | 54 | 14,065 | 6,939 | 2,106,708 | 10 | 59,882 | 106 | 370,593 |

Note: NA - data not available.
Source: Lloyd's Register of Shipping Statistical Tables.

TABLE 18. (Continued) STATISTICAL ANALYSIS OF THE VARIOUS TYPES OF VESSELS COMPRISING THE SAUDI MERCHANT FLEET AND COMPARISON TO THE RESPECTIVE CATEGORIES IN THE WORLD FLEET FOR THE PERIOD 1968 THROUGH 1982.

| Year | Total number and g.r.t. of Saudi miscellaneous vessel fleet. (Column CC) | | Total number and g.r.t. of world miscellaneous vessel fleet. (Column DD) | | The section below contains the percent (%) relationships of the gross registered tonnages of the various types of vessels comprising the Saudi merchant fleet to the respective various categories of vessels comprising the world merchant fleet. The percentages are calculated simply by ratio comparison of the Saudi tonnage figures to the world tonnage figures for each vessel category and year and then multiplied by one hundred. | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (#) | (g.r.t.) | (#) | (g.r.t.) | (Column EE) oil tankers | (Column FF) liquid gas (LNG) carriers | (Column GG) chemical tankers | (Column HH) ore/bulk carriers | (Column II) ore/oil & bulk/oil carriers | (Column JJ) combination single-deck cargo ships | (Column KK) combination multi-deck cargo ships | (Column LL) combination passenger/cargo ships |
| 1968 | NA | NA | NA | NA | 0.000% | 0.000% | 0.000% | 0.000% | 0.000% | NA | NA | NA |
| 1969 | NA | NA | NA | NA | 0.000% | 0.000% | 0.000% | 0.000% | 0.000% | NA | NA | NA |
| 1970 | NA | NA | 7,487 | 7,511,706 | 0.000% | 0.000% | 0.000% | 0.000% | 0.000% | ---data for all three categories: 0.050% | | |
| 1971 | NA | NA | 8,288 | 8,014,810 | 0.017% | 0.000% | 0.000% | 0.000% | 0.000% | ---data for all three categories: 0.035% | | |
| 1972 | 0 | 0 | 1,140 | 1,204,176 | 0.016% | 0.000% | 0.000% | 0.000% | 0.000% | ---data for all three categories: 0.041% | | |
| 1973 | 0 | 0 | 1,220 | 1,248,036 | 0.014% | 0.000% | 0.000% | 0.000% | 0.000% | ---data for all three categories: 0.052% | | |
| 1974 | 0 | 0 | 1,308 | 1,345,717 | 0.015% | 0.000% | 0.000% | 0.000% | 0.000% | ---data for all three categories: 0.054% | | |
| 1975 | 2 | 8,413 | 1,394 | 1,480,537 | 0.079% | 0.000% | 0.000% | 0.000% | 0.000% | ---data for all three categories: 0.056% | | |
| 1976 | 2 | 8,413 | 1,495 | 1,613,557 | 0.271% | 0.000% | 0.000% | 0.000% | 0.000% | ---data for all three categories: 0.141% | | |
| 1977 | 8 | 7,645 | 2,006 | 2,470,227 | 0.493% | 0.000% | 0.000% | 0.000% | 0.000% | 0.049% | 0.165% | 0.434% |
| 1978 | 9 | 5,185 | 2,004 | 2,216,072 | 0.583% | 0.000% | 0.000% | 0.080% | 0.000% | 0.077% | 0.152% | 0.543% |
| 1979 | 10 | 8,064 | 2,287 | 2,448,392 | 0.610% | 0.993% | 0.000% | 0.078% | 0.206% | 0.069% | 0.195% | 0.639% |
| 1980 | 14 | 119,104 | 2,503 | 2,756,535 | 0.643% | 0.896% | 0.199% | 0.010% | 0.000% | 0.065% | 0.268% | 0.709% |
| 1981 | 20 | 119,618 | 2,339 | 2,630,284 | 1.317% | 0.833% | 0.267% | 0.038% | 0.000% | 0.060% | 0.789% | 0.744% |
| 1982 | 23 | 180,534 | 2,459 | 2,785,140 | 1.734% | 0.745% | 0.236% | 0.179% | 0.553% | 0.085% | 1.085% | 0.877% |

Note: All figures beginning with Column EE were calculated by the author.
Note: NA - data not available.

TABLE 18. (Continued) STATISTICAL ANALYSIS OF THE VARIOUS TYPES OF VESSELS COMPRISING THE SAUDI MERCHANT FLEET AND COMPARISON TO THE RESPECTIVE CATEGORIES IN THE WORLD FLEET FOR THE PERIOD 1968 THROUGH 1982.

| Year | The section below contains the percent (%) relationships of the gross registered tonnages of the various types of vessels comprising the Saudi merchant fleet to the respective various categories of vessels comprising the world merchant fleet. The percentages are calculated simply by ratio comparison of the Saudi tonnage figures to the world tonnage figures for each vessel category and year and then multiplied by one hundred. | | | | | | |
|---|---|---|---|---|---|---|---|
| | (Column MM) container-ships | (Column NN) trawlers & fishing vessels | (Column OO) ferries & passenger ship fleet | (Column PP) supply ships and tenders | (Column QQ) tugboats and towboats | (Column RR) livestock carriers | (Column SS) miscellaneous vessels |
| 1968 | 0.000% | 0.000% | 0.000% | NA | NA | 0.000% | NA |
| 1969 | 0.000% | 0.000% | 0.000% | NA | NA | 0.000% | NA |
| 1970 | 0.000% | 0.000% | 0.000% | NA | NA | 0.000% | NA |
| 1971 | 0.000% | 0.000% | 0.000% | NA | NA | 0.000% | NA |
| 1972 | 0.000% | 0.000% | 0.000% | 0.192% | 0.267% | 0.000% | 0.000% |
| 1973 | 0.000% | 0.001% | 0.000% | 0.170% | 0.318% | 0.000% | 0.000% |
| 1974 | 0.000% | 0.001% | 0.000% | 0.061% | 0.310% | 0.000% | 0.000% |
| 1975 | 0.000% | 0.001% | 0.071% | 0.050% | 0.308% | 2.967% | 0.568% |
| 1976 | 0.000% | 0.001% | 0.141% | 0.159% | 0.318% | 2.964% | 0.521% |
| 1977 | 0.000% | 0.004% | 0.245% | 1.648% | 0.274% | 2.664% | 0.309% |
| 1978 | 0.000% | 0.004% | 0.257% | 0.936% | 0.438% | 2.202% | 0.233% |
| 1979 | 0.000% | 0.004% | 0.330% | 0.935% | 0.430% | 0.503% | 0.329% |
| 1980 | 0.000% | 0.004% | 0.536% | 1.592% | 0.430% | 3.180% | 4.320% |
| 1981 | 0.168% | 0.004% | 0.596% | 1.411% | 0.502% | 13.139% | 4.547% |
| 1982 | 0.268% | 0.011% | 0.524% | 1.324% | 0.667% | 16.158% | 6.482% |

Note: All figures above were calculated by the author.
Note: NA - data not available.

TABLE 19. -- STATISTICAL CHART COMPARING AGE AND TONNAGE OF ALL VESSELS COMPRISING THE SAUDI MERCHANT FLEET IN 1982.

| Divisions of vessel tonnage spanning fleet but excluding those under 100 g.r.t. | Age Categories of All Vessels. | | | | | | | | | | | | | | Total tonnage and number of vessels in each tonnage division (sum of figures for each division). | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 0 - 4 Years old. | | 5 - 9 Years old. | | 10 - 14 Years old. | | 15 - 19 Years old. | | 20 - 24 Years old. | | 25 - 29 Years old. | | 30 years and older. | | | |
| | Number of vessels. | Total tonnage. | Number of vessels. | Total tonnage. | Number of vessels. | Total tonnage. | Number of vessels. | Total tonnage. | Number of vessels. | Total tonnage. | Number of vessels. | Total tonnage. | Number of vessels. | Total tonnage. | (#) | (g.r.t.) |
| 100 - 499 | 48 | 10,373 | 15 | 3,489 | 10 | 3,698 | 8 | 2,507 | 11 | 4,302 | 6 | 2,512 | 19 | 6,874 | 117 | 33,755 |
| 500 - 999 | 9 | 5,834 | 6 | 4,760 | 12 | 10,448 | 6 | 5,276 | 4 | 3,260 | 1 | 858 | 1 | 687 | 39 | 31,123 |
| 1,000 - 1,999 | 1 | 1,759 | 3 | 4,247 | 13 | 22,267 | 5 | 6,310 | 8 | 10,621 | 3 | 4,044 | 2 | 3,305 | 35 | 52,553 |
| 2,000 - 3,999 | 0 | 0 | 2 | 6,789 | 4 | 12,122 | 1 | 2,804 | 5 | 14,580 | 7 | 24,020 | 3 | 8,531 | 22 | 68,846 |
| 4,000 - 5,999 | 1 | 4,169 | 2 | 8,969 | 1 | 4,022 | 3 | 14,762 | 3 | 14,666 | 3 | 15,572 | 4 | 19,076 | 17 | 81,236 |
| 6,000 - 6,999 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 13,383 | 2 | 13,366 | 1 | 6,135 | 0 | 0 | 5 | 32,884 |
| 7,000 - 7,999 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 14,648 | 4 | 31,109 | 2 | 14,553 | 2 | 15,164 | 10 | 75,474 |
| 8,000 - 9,999 | 0 | 0 | 0 | 0 | 1 | 9,481 | 2 | 16,702 | 21 | 192,915 | 7 | 62,602 | 2 | 16,908 | 33 | 298,608 |
| 10,000 - 14,999 | 0 | 0 | 2 | 29,660 | 5 | 69,905 | 4 | 47,880 | 5 | 60,281 | 2 | 22,969 | 1 | 10,150 | 19 | 240,845 |
| 15,000 - 19,999 | 2 | 30,162 | 7 | 110,293 | 1 | 19,712 | 1 | 17,389 | 2 | 31,853 | 0 | 0 | 0 | 0 | 13 | 209,409 |
| 20,000 - 29,999 | 1 | 20,657 | 3 | 74,668 | 1 | 20,328 | 3 | 81,193 | 1 | 27,601 | 1 | 20,355 | 0 | 0 | 10 | 244,802 |
| 30,000 - 39,999 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 37,710 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 37,710 |
| 40,000 - 49,999 | 1 | 48,920 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 48,920 |
| 50,000 - 59,999 | 0 | 0 | 0 | 0 | 3 | 164,633 | 3 | 160,805 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 325,438 |
| 60,000 - 69,999 | 0 | 0 | 0 | 0 | 1 | 61,455 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 61,455 |
| 70,000 - 79,999 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Source: Lloyd's Register of Shipping Statistical Tables (various years) and Seatrade Publications Ltd., 1983.

TABLE 19. (Continued) STATISTICAL CHART COMPARING AGE AND TONNAGE OF ALL VESSELS COMPRISING THE SAUDI MERCHANT FLEET IN 1982.

| Divisions of vessel tonnage. | Age Categories of All Vessels. | | | | | | | | | | | | | | Total tonnage and number of vessels. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 0 - 4 Years old. | | 5 - 9 Years old. | | 10 - 14 Years old. | | 15 - 19 Years old. | | 20 - 24 Years old. | | 25 - 29 Years old. | | 30 years and older. | | | |
| 80,000 - 89,999 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 90,000 - 99,999 | 0 | 0 | 0 | 0 | 1 | 91,954 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 91,954 |
| 100,000 - 109,999 | 0 | 0 | 0 | 0 | 2 | 216,766 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 216,766 |
| 110,000 - 119,999 | 0 | 0 | 0 | 0 | 1 | 113,933 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 113,933 |
| 120,000 - 129,999 | 0 | 0 | 1 | 125,389 | 3 | 376,224 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 501,613 |
| 130,000 - 139,999 | 0 | 0 | 3 | 399,620 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 399,620 |
| 140,000 - 149,999 | 0 | 0 | 0 | 0 | 1 | 143,959 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 143,959 |
| 150,000 - 159,999 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 160,000 - 169,999 | 0 | 0 | 2 | 320,854 | 3 | 491,513 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 812,367 |
| 170,000 - 179,999 | 0 | 0 | 1 | 178,519 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 178,519 |
| 180,000 - 189,999 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 190,000 - 199,999 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 200,000 - 209,999 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 210,000 - 219,999 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total number and tonnage of vessels in each age category. | 63 | 121,874 | 47 | 1,267,257 | 63 | 1,832,420 | 41 | 421,369 | 66 | 404,554 | 33 | 173,620 | 34 | 80,695 | 347 | 4,301,789 |

Source: Lloyd's Register of Shipping Statistical Tables (various years) and Seatrade Publications Ltd., 1983.

TABLE 20. -- STATISTICAL CHART COMPARING AGE AND TONNAGE OF OIL TANKERS BELONGING TO THE SAUDI MERCHANT FLEET IN 1982.

| Divisions of oil tanker tonnage spanning fleet but excluding those under 100 g.r.t. | Age Categories of All Oil Tankers | | | | | | | | | | | | | | Total tonnage and number of oil tankers in each tonnage division (sum of line). | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 0 - 4 Years old. | | 5 - 9 Years old. | | 10 - 14 Years old. | | 15 - 19 Years old. | | 20 - 24 Years old. | | 25 - 29 Years old. | | 30 years and older. | | | |
| | Number of tankers. | Total tonnage. | Number of tankers. | Total tonnage. | Number of tankers. | Total tonnage. | Number of tankers. | Total tonnage. | Number of tankers. | Total tonnage. | Number of tankers. | Total tonnage. | Number of tankers. | Total tonnage. | (#) | (g.r.t.) |
| 100 - 499 | 0 | 0 | 0 | 0 | 1 | 416 | 1 | 499 | 7 | 3,097 | 1 | 499 | 6 | 2,701 | 16 | 7,212 |
| 500 - 999 | 0 | 0 | 0 | 0 | 9 | 8,486 | 5 | 4,579 | 2 | 1,737 | 1 | 858 | 0 | 0 | 17 | 15,660 |
| 1,000 - 1,999 | 0 | 0 | 1 | 1,361 | 11 | 18,767 | 3 | 3,888 | 3 | 3,708 | 1 | 1,563 | 0 | 0 | 19 | 29,287 |
| 2,000 - 3,999 | 0 | 0 | 1 | 3,675 | 1 | 3,691 | 1 | 2,804 | 0 | 0 | 2 | 6,180 | 0 | 0 | 5 | 16,350 |
| 4,000 - 5,999 | 1 | 4,169 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 4,169 |
| 6,000 - 7,999 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8,000 - 9,999 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 8,859 | 0 | 0 | 1 | 8,859 |
| 10,000 - 14,999 | 0 | 0 | 0 | 0 | 3 | 44,801 | 1 | 13,721 | 1 | 12,600 | 1 | 12,591 | 0 | 0 | 6 | 83,713 |
| 15,000 - 19,999 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 31,853 | 0 | 0 | 0 | 0 | 2 | 31,853 |
| 20,000 - 29,999 | 0 | 0 | 2 | 51,228 | 0 | 0 | 1 | 28,047 | 1 | 27,601 | 1 | 20,355 | 0 | 0 | 5 | 127,231 |
| 30,000 - 39,999 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 37,710 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 37,710 |
| 40,000 - 49,999 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 50,000 - 59,999 | 0 | 0 | 0 | 0 | 2 | 109,897 | 2 | 106,219 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 216,116 |
| 60,000 - 69,999 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 70,000 - 79,999 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 80,000 - 89,999 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 90,000 - 99,999 | 0 | 0 | 0 | 0 | 1 | 91,954 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 91,954 |
| 100,000 - 109,999 | 0 | 0 | 0 | 0 | 2 | 216,766 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 216,766 |
| 110,000 - 119,999 | 0 | 0 | 0 | 0 | 1 | 113,933 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 113,933 |
| 120,000 - 129,999 | 0 | 0 | 1 | 125,389 | 3 | 376,224 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 501,613 |
| 130,000 - 139,999 | 0 | 0 | 3 | 399,620 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 399,620 |
| 140,000 - 149,999 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 150,000 - 159,999 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 160,000 - 169,999 | 0 | 0 | 2 | 320,854 | 3 | 491,513 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 812,367 |
| 170,000 - 179,999 | 0 | 0 | 1 | 178,519 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 178,519 |
| 180,000 - 189,999 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 190,000 - 199,999 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 200,000 - 209,999 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 210,000 - 219,999 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total number and tonnage of oil tankers in each age category | 1 | 4,169 | 11 | 1,080,646 | 37 | 1,476,448 | 15 | 197,467 | 16 | 80,596 | 8 | 50,905 | 6 | 2,701 | 94 | 2,892,932 |

Source: Lloyd's Register of Shipping Statistical Tables (various years) and Seatrade Publications Ltd., 1983.

TABLE 21

STATISTICAL CHART ON THE TONNAGE DIVISIONS OF SAUDI ARABIA'S STEAMSHIP FLEET FOR THE PERIOD 1968 THROUGH 1982.

| Tonnage divisions spanning fleet. | Year | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1968 | 1969 | 1970 | 1971 | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 | 1978 | 1979 | 1980 | 1981 | 1982 |
| 100 - 499 | NA | NA | NA | NA | NA | NA | NA | NA | NA | 1 | 1 | 1 | 1 | 1 | 1 |
| 500 - 999 | NA | NA | NA | NA | NA | NA | NA | NA | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| 1,000 - 1,999 | NA | NA | NA | NA | NA | NA | NA | NA | NA | 1 | 1 | 1 | 1 | 1 | 0 |
| 2,000 - 3,999 | NA | NA | NA | NA | NA | NA | NA | NA | NA | 0 | 0 | 0 | 1 | 2 | 1 |
| 4,000 - 5,999 | NA | NA | NA | NA | NA | NA | NA | NA | NA | 0 | 0 | 0 | 0 | 1 | 1 |
| 6,000 - 7,999 | NA | NA | NA | NA | NA | NA | NA | NA | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| 8,000 - 9,999 | NA | NA | NA | NA | NA | NA | NA | NA | NA | 0 | 1 | 1 | 1 | 1 | 2 |
| 10,000 - 14,999 | NA | NA | NA | NA | NA | NA | NA | NA | NA | 0 | 0 | 0 | 0 | 1 | 1 |
| 15,000 - 19,999 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 |
| 20,000 - 29,999 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 3 | 3 | 1 | 3 |
| 30,000 - 39,999 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 2 | 1 | 1 | 1 | 1 |
| 40,000 - 59,999 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 3 | 2 | 2 | 2 | 2 |
| 60,000 - 79,999 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 2 | 2 | 0 |
| 80,000 - 99,999 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 100,000 - 119,999 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 1 | 3 |
| 120,000 - 139,999 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 2 | 4 | 4 | 5 | 7 |
| 140,000 - 159,999 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 160,000 - 179,999 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 6 |
| | 5 | NA | 2 | 3 | 3 | 3 | 3 | 3 | 6 | 11 | 15 | 15 | 16 | 23 | 30 |
| | Total number of steamships per year. | | | | | | | | | | | | | | |

Note: All tonnage divisions are gross registered tons (g.r.t.).
Note: NA - data not available.
Source: Lloyd's Register of Shipping Statistical Tables (various years) and Seatrade Publications Ltd., 1983.

TABLE 22

STATISTICAL CHART ON THE TONNAGE DIVISIONS OF SAUDI ARABIA'S MOTORSHIP FLEET FOR THE PERIOD 1968 THROUGH 1982.

| Tonnage divisions spanning fleet. | Year | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1968 | 1969 | 1970 | 1971 | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 | 1978 | 1979 | 1980 | 1981 | 1982 |
| 100 - 499 | NA | NA | NA | NA | NA | NA | NA | NA | NA | 47 | 75 | 75 | 87 | 97 | 116 |
| 500 - 999 | NA | NA | NA | NA | NA | NA | NA | NA | NA | 9 | 9 | 13 | 20 | 31 | 39 |
| 1,000 - 1,999 | NA | NA | NA | NA | NA | NA | NA | NA | NA | 15 | 19 | 22 | 32 | 35 | 35 |
| 2,000 - 3,999 | NA | NA | NA | NA | NA | NA | NA | NA | NA | 12 | 10 | 14 | 20 | 20 | 21 |
| 4,000 - 5,999 | NA | NA | NA | NA | NA | NA | NA | NA | NA | 9 | 10 | 10 | 10 | 13 | 16 |
| 6,000 - 7,999 | NA | NA | NA | NA | NA | NA | NA | NA | NA | 5 | 5 | 4 | 8 | 11 | 15 |
| 8,000 - 9,999 | NA | NA | NA | NA | NA | NA | NA | NA | NA | 2 | 2 | 5 | 7 | 23 | 31 |
| 10,000 - 14,999 | 0 | NA | NA | NA | NA | NA | NA | NA | NA | 5 | 5 | 6 | 7 | 12 | 18 |
| 15,000 - 19,999 | 0 | 0 | 0 | 0 | 0 | NA | NA | NA | NA | 1 | 2 | 3 | 2 | 8 | 13 |
| 20,000 - 29,999 | 0 | 0 | 0 | 0 | 0 | 0 | NA | NA | NA | 0 | 0 | 1 | 1 | 5 | 7 |
| 30,000 - 39,999 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 40,000 - 59,999 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 3 | 3 | 6 | 5 |
| 60,000 - 79,999 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 1 | 0 | 0 | 0 | 1 | 1 |
| 80,000 - 99,999 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 |
| 100,000 - 119,999 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 120,000 - 139,999 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | NA | NA | NA | NA | NA | NA |
| | 34 | NA | 35 | 30 | 32 | 40 | 40 | 52 | 78 | 108 | 139 | 157 | 198 | 263 | 317 |
| | Total number of motorships per year. | | | | | | | | | | | | | | |

Note: All tonnage divisions are gross registered tons (g.r.t.).
Note: NA - data not available.
Source: Lloyd's Register of Shipping Statistical Tables (various years) and Seatrade Publications Ltd., 1983.

TABLE 23. -- STATISTICAL CHART PROVIDING PROPULSION ANALYSIS OF ENTIRE SAUDI MERCHANT FLEET FOR THE PERIOD 1968 THROUGH 1982.

| Year | Steamships | | | | | | | | Motorships | | | | Total tonnage and number of vessels (both categories) for each year. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Reciprocating | | Reciprocating/Turbine | | Turbine | | Turbo-electric | | Diesel | | Diesel-electric | | | |
| | (#) | (g.r.t.) | (#) | (g.r.t.) | (#) | (g.r.t.) | (#) | (g.r.t.) | (#) | (g.r.t.) | (#) | (g.r.t.) | (#) | (g.r.t.) |
| 1968 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | 39 | 49,625 |
| 1969 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 1970 | 2 | 1,661 | 0 | 0 | 0 | 0 | 0 | 0 | 35 | 46,882 | 0 | 0 | 37 | 48,543 |
| 1971 | 2 | 1,661 | 0 | 0 | 1 | 16,686 | 0 | 0 | 30 | 27,145 | 0 | 0 | 33 | 45,492 |
| 1972 | 2 | 1,661 | 0 | 0 | 1 | 16,686 | 0 | 0 | 32 | 32,022 | 0 | 0 | 35 | 50,369 |
| 1973 | 2 | 1,661 | 0 | 0 | 1 | 16,686 | 0 | 0 | 40 | 40,183 | 0 | 0 | 43 | 58,530 |
| 1974 | 2 | 1,661 | 0 | 0 | 1 | 16,686 | 0 | 0 | 40 | 42,928 | 0 | 0 | 43 | 61,275 |
| 1975 | 2 | 1,661 | 1 | 16,686 | 0 | 0 | 0 | 0 | 52 | 161,899 | 0 | 0 | 55 | 180,246 |
| 1976 | 2 | 1,661 | 0 | 0 | 4 | 211,737 | 0 | 0 | 78 | 375,347 | 0 | 0 | 84 | 588,745 |
| 1977 | 2 | 1,661 | 0 | 0 | 9 | 562,405 | 0 | 0 | 108 | 454,647 | 0 | 0 | 119 | 1,018,713 |
| 1978 | 2 | 1,661 | 0 | 0 | 12 | 826,850 | 1 | 8,908 | 139 | 408,693 | 0 | 0 | 154 | 1,246,112 |
| 1979 | 2 | 1,661 | 0 | 0 | 12 | 824,174 | 1 | 8,908 | 157 | 608,209 | 0 | 0 | 172 | 1,442,952 |
| 1980 | 2 | 1,661 | 0 | 0 | 14 | 888,515 | 0 | 0 | 198 | 699,492 | 0 | 0 | 214 | 1,589,668 |
| 1981 | 2 | 1,661 | 0 | 0 | 21 | 1,749,739 | 0 | 0 | 263 | 1,370,421 | 0 | 0 | 286 | 3,121,821 |
| 1982 | 1 | 233 | 0 | 0 | 28 | 2,707,845 | 1 | 8,907 | 317 | 1,584,804 | 0 | 0 | 347 | 4,301,789 |

Note: NA - data not available.

Source: Lloyd's Register of Shipping Statistical Tables (various years).

TABLE 24. -- STATISTICAL COMPARISON OF ANNUAL PROPOSED TONNAGE INCREASES FOR SAUDI MERCHANT FLEET TO ACTUAL TONNAGE INCREASES AND WORLD PLANNED TONNAGE INCREASES.

| Year | Total number of vessels planned to be added to Saudi fleet in the following year. | Total g.r.t. of vessels planned to be added to Saudi fleet in the following year. | Actual increase in g.r.t. of Saudi fleet over preceding year. | Percent (%) of annual planned g.r.t. increase for the following year actually realized. (This is calculated by taking the next year's recorded increase and comparing it to the annual planned increase.) | Total number of vessels planned to be added to world fleet in the following year. | Total g.r.t. of vessels planned to be added to world fleet in the following year. | Percent (%) relationship of Saudi planned g.r.t. increase for each year to the annual world planned g.r.t. increases. |
|---|---|---|---|---|---|---|---|
| 1968 | 8 | 11,641 | NA | NA | 10,896 | 66,408,177 | 0.017% |
| 1969 | NA | NA | NA | NA | NA | NA | NA |
| 1970 | NA | NA | NA | NA | 10,776 | 73,562,654 | NA |
| 1971 | NA | NA | NA | NA | 10,750 | 77,836,368 | NA |
| 1972 | 14 | 13,461 | 4,877 | + 60.627% | 10,780 | 83,010,867 | 0.016% |
| 1973 | 20 | 11,206 | 8,161 | + 24.495% | 11,125 | 88,026,238 | 0.012% |
| 1974 | NA | NA | 2,745 | (+ <100.000%) | 11,134 | 93,340,560 | NA |
| 1975 | 17 | 40,904 | 118,971 | + 998.677% | 11,261 | 100,143,393 | 0.040% |
| 1976 | 26 | 308,533 | 408,499 | + 139.356% | 11,506 | 107,782,628 | 0.286% |
| 1977 | 61 | 538,981 | 429,960 | + 42.190% | 11,982 | 114,334,191 | 0.471% |
| 1978 | 82 | 696,931 | 227,399 | + 28.243% | 11,558 | 114,937,352 | 0.606% |
| 1979 | 102 | 530,330 | 196,840 | + 27.665% | 11,606 | 115,008,130 | 0.461% |
| 1980 | 105 | 554,706 | 146,716 | + 276.210% | 11,650 | 113,767,738 | 0.487% |
| 1981 | 145 | 1,191,684 | 1,532,153 | + 99.016% | 11,315 | 112,896,174 | 1.055% |
| 1982 | 169 | 1,877,169 | 1,179,968 | NA | 11,380 | 112,146,385 | 1.673% |

Note: The figures listed as the percent (%) of annual planned g.r.t. increase for the following year actually realized are recorded on the same line with the planned g.r.t. increase figures. However, in order to understand the calculation (and its derivation), one must look to the following year's actual g.r.t. increase and compare it to the preceding year planned g.r.t. increase to derive the ratio relationship (%).

Note: NA - data not available.

# APPENDIX B.

## GRAPHS ON VESSEL CLASS DEVELOPMENT

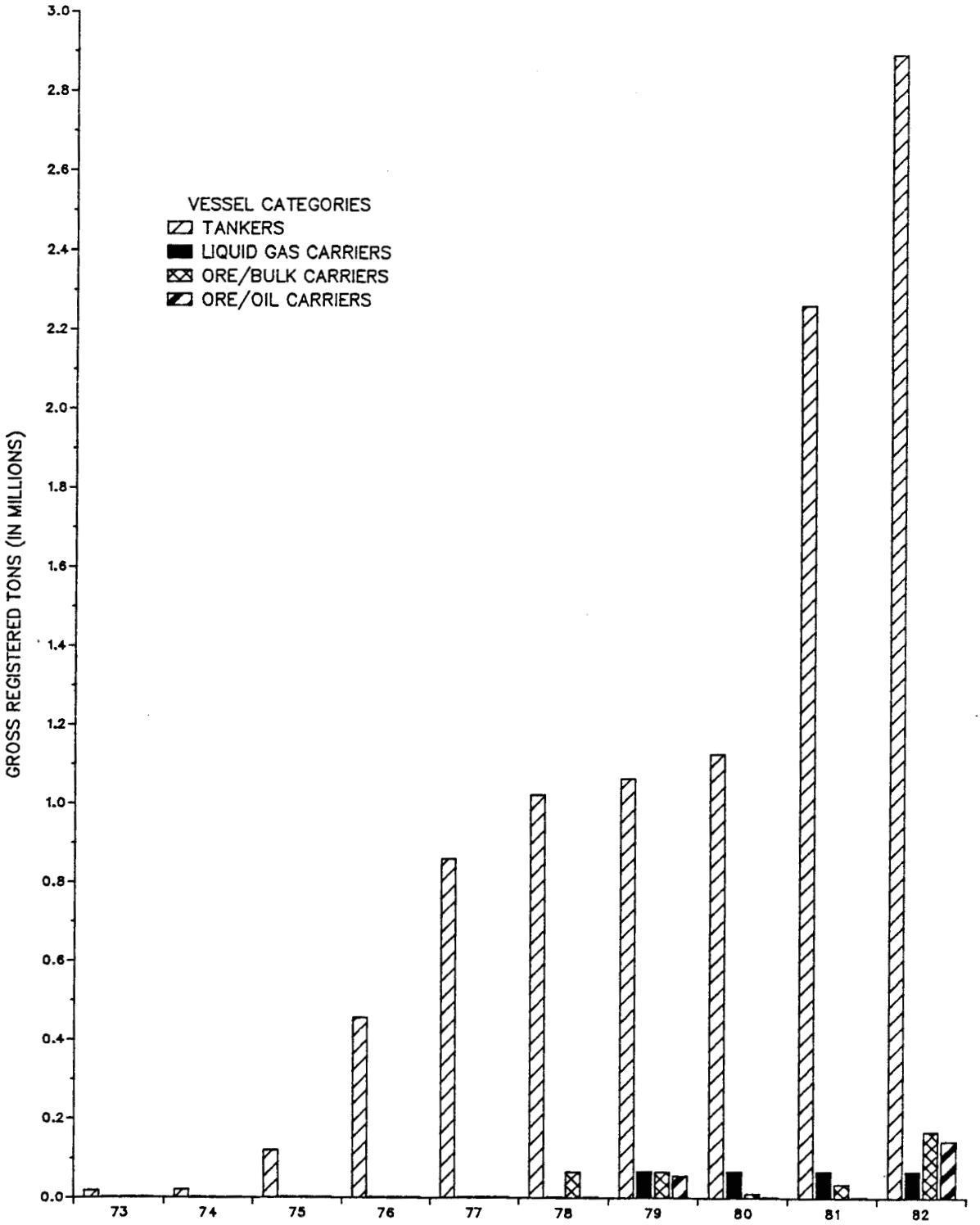



FIGURE 7. GROWTH OF THE TANKER, LIQUID GAS CARRIER, ORE/BULK, AND ORE/OIL CARRIER FLEETS FOR THE PERIOD 1973 TO 1982.

Source: Lloyd's Register of Shipping Statistical Tables (various years).
Graphics Program: Dennis Nullet, University of Hawaii.

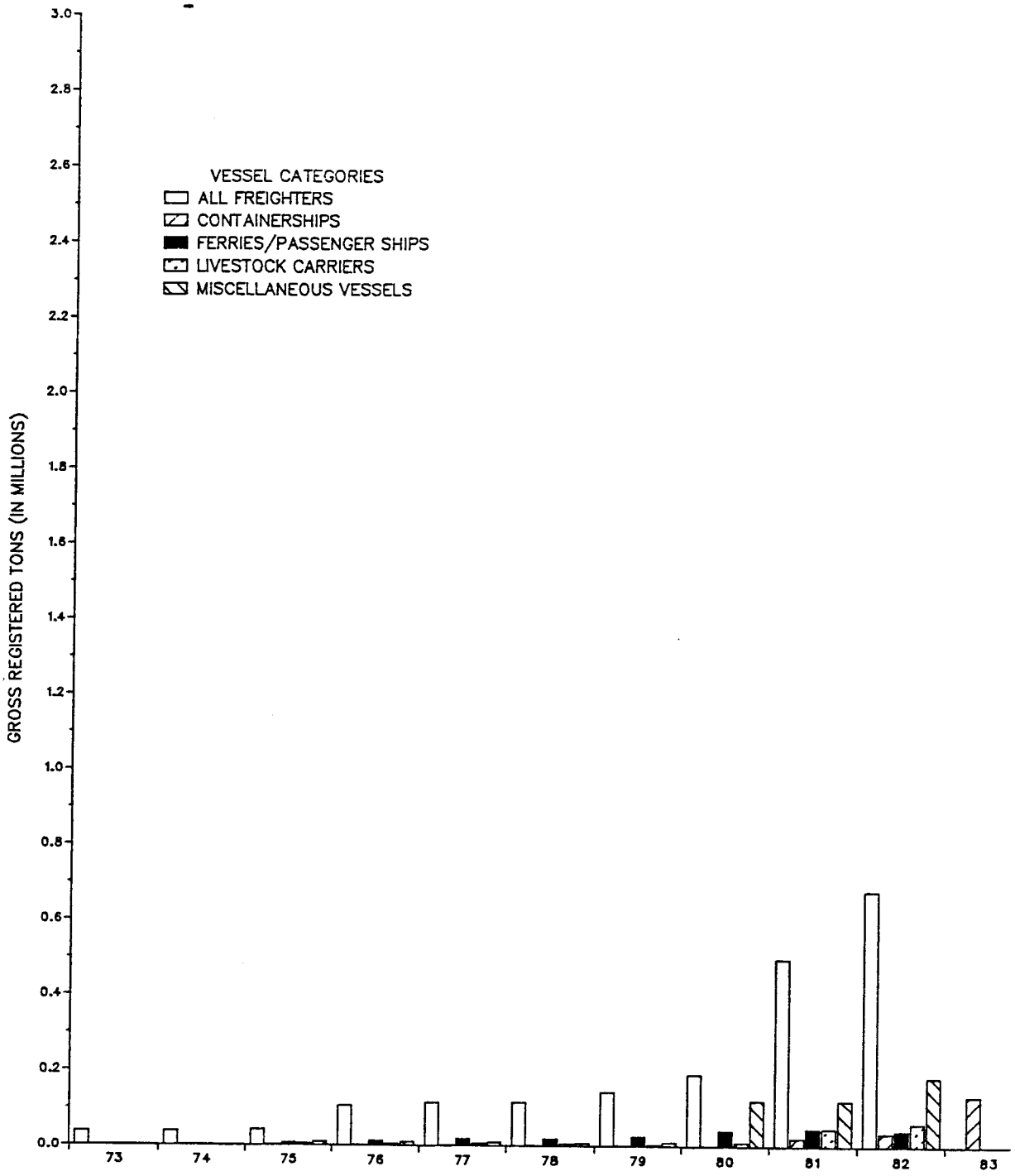



FIGURE 8. GROWTH OF THE FREIGHTER, CONTAINERSHIP, FERRY AND PASSENGER SHIP, LIVESTOCK CARRIER, AND MISCELLANEOUS VESSEL FLEETS FOR THE PERIOD 1973 TO 1982.

Note: The freighter category consists of the multi-deck and single-deck cargo ships and the combination passenger/cargo ships. The containership category includes RO/RO ships.

Source: Lloyd's Register of Shipping Statistical Tables (various years).
Graphics Program: Dennis Nullet, University of Hawaii.

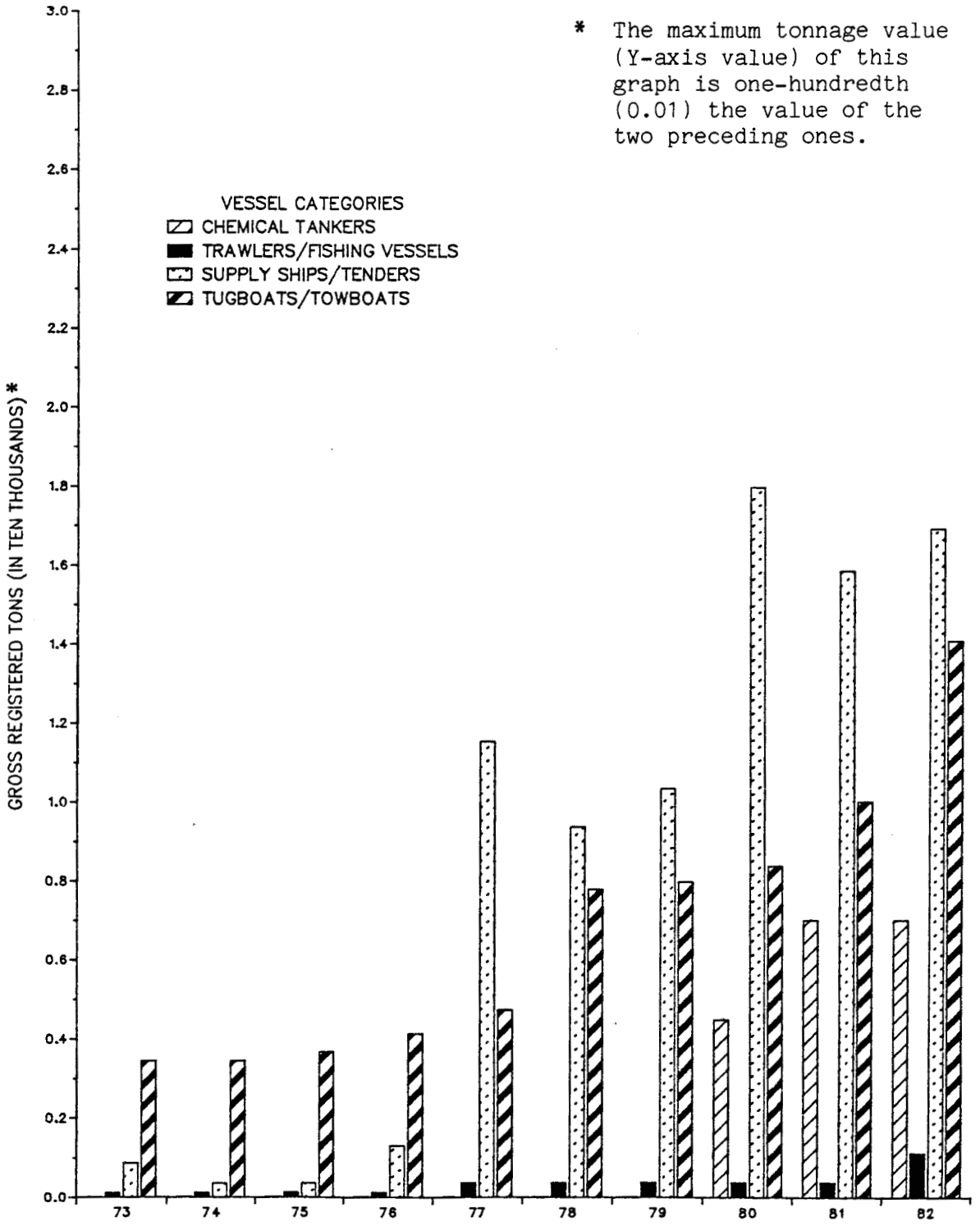



FIGURE 9. GROWTH OF THE CHEMICAL TANKER, TRAWLER/FISHING VESSEL, SUPPLY SHIP AND TENDER, AND TUGBOAT/TOWBOAT FLEETS FOR THE PERIOD 1973 TO 1982.

Source: Lloyd's Register of Shipping Statistical Tables (various years).
Graphics Program: Dennis Nullet, University of Hawaii.

## NOTES FOR ALL CHAPTERS

1. In 1980 the Saudi per capita income factor was $11,260 for GNP (Statesman's Yearbook, 1983, 1038) and $16,870 for GDP (E.I.U.S., 1983, No. 2).

2. Traditional evolutionary economic development is a term coined by the author to describe a general economic development pattern observed repeatedly in history. It is derived from the author's perceptions of world economic history and review of literature on economic development. W.W. Rostow's The Stages of Economic Growth (Cambridge University Press, Cambridge, England, 1961) stands out as clearly similar to the author's viewpoint concerning economic development. Some may argue that my use of the term is only applicable to mineral oriented economies. However, a review of history offers examples contrary to this contention and, in other cases, suggests ambiguity in the matter.

3. API° quality refers to the American Petroleum Institute's density level ratings of crude oils. The higher the degree number the lighter the oil and the more preferable for refining purposes. Saudi Arabia produces four different crudes: Berri, 38° API; crude Arabian Light, which varies from 32° - 36° API; Arabian Medium, with a range of 29° - 31° API; and Arabian Heavy, with a range of 26° - 28° API. The 34° API crude used as the marker is simply an average of the Arabian Light blend. Generally speaking, anything above 33° API is high quality oil, more sought after, and commands a higher price (Moliver and Abbondante, 1980, 23).

4. The takeover of ARAMCO by Saudi Arabia was actually effected later in April 1974 but made retroactive to January 1, 1974 (E.I.U.S., 1974, No.2).

5. OPEC selected the 34° API blend as the marker crude from which the price differentials of the other blends are calculated. Historically, the oil companies that had been controlling production preferred this blend since it was easier to refine both physically and economically and consequently more suitable as the price regulator.

6. To those familiar with Saudi government investments this statement will appear untrue since they did invest in shipping through the state companies Petromin, AMPTC, and UASC. However, the AMPTC investment was more a political gesture done for OAPEC with management left in the hands of the Kuwaiti overseers. The UASC commitment was limited to a couple of ships in the early days of the company and management was left in the hands of the Kuwaitis. In Petromin's case, the two tankers are run by the semi-autonomous subsidiary Petroship thereby minimizing government direction. Consequently, the role of the government has been low-key and the NSCSA stake is the first publicized commitment displaying formal downstreaming in shipping.

7. The first exploratory and production concession agreement was granted by the government to ARAMCO's predecessor CASOC on May 29,1933. Oil production first began in 1938 with 500,000 barrels lifted that year (El Mallakh, 1982, 55).

8. The country is mostly desert with no free-flowing water and temperatures that may reach more than 120° Fahrenheit.

9. These trades declined due to outlawing by most nations and British enforcement of the law.

10. The calculation used to derive the estimation is:

$$\frac{It \times Ps}{100} = Is$$

where: It = total annual income;
Ps = the Saudi share (7.14%);
Is = the Saudi annual income.

11. The cultured pearl was developed by the Japanese in 1921.

12. Tanganyika is the old name for the African mainland portion of Tanzania. Present-day Tanzania was formed when Tanganyika and Zanzibar united to form an independent federation in 1962.

13. Imports from other countries were negligible due to low demand. Hence, there was a one-way export trade.

14. The Suez Canal opened in 1869 allowing considerably greater interchange between Europe and Asia and more participation by nations which till then had not been able to make the long journeys.

15. Due to the desolateness of the Rub al Khali region of southern Saudi Arabia, no formal surveys, and lack of interest the boundaries between these states are not formally demarcated.

16. Israel does not directly border Saudi Arabia but because of its proximity in the Gulf of Aqaba, its former domination of the Sinai Peninsula, and the hostile feelings by Saudi Arabia toward the Jewish state, it is considered a bordering state that does not make a good neighbor.

17. Hinterland as used here refers to the lands north of the northern bordering states. These are Iran, Syria, Turkey, and the U.S.S.R.. There is little that Saudi Arabia needs from these countries and because of differing political ideologies relations with them are minimal.

18. In 1950 the Saudis completed constructing the Trans-Arabian Pipeline which transports oil from Qaisumah on the Persian Gulf coast to Sidon, Lebanon where it goes into tankers for export (ARAMCO, 1980, 206). Also, there is a submarine pipeline from Ras Tanura to Bahrain (ARAMCO, 1980, 201).

19. The Quoran is not a holy text in the same sense as the Bible is perceived, but a literal text of the "Word of God (Allah)." Consequently, it is accepted as absolute, unquestionable, and not to be contradicted.

20. Arab as used here refers to the entire Arab world which consists of the following 21 countries: Algeria, Bahrain, Egypt, Iraq, Jibuti, Jordan, Kuwait, Lebanon, Libya, Mauritania, Morocco, Oman, Qatar, Saudi Arabia, Somalia, Sudan, Syria, Tunisia, U.A.E., Y.A.R., and D.R.Y..

21. Saudi Arabia is the only Arab country where private ownership dominates state (government) ownership. In Algeria, Iraq, Libya, Somalia, Sudan, Tunisia, and the D.R.Y. shipping is solely run by the state. In Egypt, Jordan, Kuwait, Morocco, Qatar, Syria, and the U.A.E. state ownership of the shipping fleet dominates private ownership. Only in Bahrain, Lebanon, and Mauritania is shipping entirely in the hands of private enterprise. Jibuti, Oman, and the Y.A.R. have no shipping fleets.

22. Though alcohol is banned it is still found in Saudi Arabia, abundantly at times. Scotch appears to be preferred (Isaak, 1984, p.c.).

23. In the mid-1970s the Saudis would be charged $3,500 for a container that cost $2,000 to ship to the Persian Gulf (Seaward, 1980, 11).

24. The Saudi share of world seaborne trade (cargo tonnage loaded and unloaded) is about 13% based on 1976 and 1980 data (extrapolated by author from U.N. Stat. Yrbk., 1981, 55 and Europa, 1983, 553).

25. Examples of the nationalities crewing Saudi ships include Scandanavians, British, Pakistanis, Filipinos, Indians, Koreans, and Hong Kongese. When the author visited the M.V. Saudi Abha the officers were Swedish and the crew British.

26. Umm Sidra is a village 53 miles north of Jiddah.

27. Shipper as used here can be any of the following: seller, freight forwarder, buyer, consignee, etc.

28. The backlog of ships waiting to unload at times numbered one hundred, and they waited months during the worst times of the mid-1970s.

29. The IDF is a Saudi financial agency that has the function to promote development.

30. The transport sector consists of roads, railroads, ports, air transportation equipment and facilities, and telecommunications networks.

31. As of January 1, 1983.

32. In the case of large tankers, VLCCs, and ULCCs the deadweight tonnage (d.w.t.) of the vessels is the preferable form of defining size and cargo capacity. Refer to the glossary for a more precise explanation of g.r.t. and d.w.t..

33. It is indirect in that it includes all portions of the ship not used for cargo stowage such as the engine room and superstructure. Refer to the glossary for clarification.

34. These vessels are not included in the statistical tables since they were acquired after January 1, 1983.

35. The calculations are as follows:

| | | | | | | |
|---|---|---|---|---|---|---|
| Step 1. | 676,431 (g.r.t. of freighter fleet) | + | 167,206 (g.r.t. of containership fleet) | = | 843,637 (Total g.r.t. of general cargo fleet) | |
| Step 2. | 167,206 | ÷ | 843,637 | = | 0.1982 | x 100 = 19.82% |

36. The calculations are as follows:

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Step 1. | 112 | + | 7 | + | 10 | + | 9 | = 138 |
| Step 2. | 676,431 | + | 167,206 | + | 59,882 | + | 167,662 | = 1,071,181 |

37. The cause of doubling of the oil prices was because of OPEC failing to reach agreement on new oil prices at the December Caracas conference which sent prices soaring (Tucker, 1980, 15) and the tension created by the Iranian Revolution.

38. The inclusion of Bahrain here is not related to the Pan-Arab joint ventures. The Kanoo family of Bahrain owns a share in one of the Saudi shipping companies.

39. Tankship is a collective term referring to all vessels constructed with tanks for carrying liquid cargoes. Vessel types included under this heading are tankers, VLCCs, ULCCs, liquid gas carriers,

chemical transporters, and ore/oil carriers (when so engaged).

40. Abu-Khadra's calculations are as follows:

Step 1. $\boxed{\frac{TP}{7.33}(PE) = TE}$

where: TP = total annual oil production in barrels;
PE = percent exported (expressed in decimal form);
TE = total amount exported annually in d.w.t.;
7.33 = conversion unit for barrels in a d.w.t..

therefore:

$$\frac{3,623,800,000}{7.33}(.985) = 486,963,574.4$$

Step 2. $\boxed{\frac{TE\ (FS)}{7.68} = FT}$

where: TE = total amount exported annually in d.w.t.;
FS = percent (%) fleet share desired in trade (expressed in decimal form);
FT = d.w.t. of tanker fleet required to carry desired fleet share;
7.68 = number of trips in a year for each tanker with an average 98% load factor (8 trips x .98 = 7.68).

therefore:

$$\frac{486,963,574.4\ (.4)}{7.68} = 25,362,686.17$$

41. This figure is the sum of the deadweight tonnages for the tanker fleet (5,745,811), liquid gas carrier fleet (100,431), chemical transporter fleet (6,614), and the ore/oil carrier (264,591).

## GLOSSARY

OAPEC: Organization of Arab Petroleum Exporting Countries. The members are: Algeria, Bahrain, Egypt, Iraq, Kuwait, Libya, Qatar, Saudi Arabia, Syria, Tunisia, and the U.A.E..

OECD: Organization for Economic Co-operation and Development. The members are: Western European countries, Australia, Canada, Japan, New Zealand, Turkey, and the U.S..

OPEC: Organization of Petroleum Exporting Countries. The members are: Algeria, Ecuador, Gabon, Indonesia, Iran, Iraq, Kuwait, Libya, Nigeria, Qatar, Saudi Arabia, Venezuela, and the U.A.E..

tonnage: In relation to shipping there are four categories. They are as follows:

deadweight ton (d.w.t.) - unit of measurement of a ship's size. The deadweight tonnage of a ship is the weight, in long tons, of cargo, fuel, stores, etc., which it is able to carry at the applicable loadline (usually the summer mark).

gross registered ton (g.r.t.) - unit of measurement of a ship's size based on its cubic capacity, one hundred cubic feet of permanently enclosed space equals one gross ton.

net registered ton (n.r.t.) - unit of measurement of a ship's size which is derived from the gross tonnage by deducting spaces for crew accommodations, propelling machinery, and fuel.

compensated gross registered ton (c.g.r.t.) - unit of shipyard capacity, derived from the gross tonnage by the application of a coefficient reflecting the standard man/hours required for production of the type of ship under construction.

When considering shipping questions, the use of d.w.t. or g.r.t. will depend upon the purpose for which the work is being undertaken. Generally speaking d.w.t. is of most use when relating the ship to the quantity of cargo to be transported, particularly in bulk. However, when considering ships designed for cargoes with a low specific gravity such as liquified natural gas, or requiring a lot of storage space in relation to the goods carried, as for containers, vehicles, or human beings, the g.r.t. is of more significance, and, for ships not employed in trading, like tugs or icebreakers, it is the only meaningful unit. Since, however, data provided may be in either unit, it has in the past been a matter of some difficulty to convert one to the other, when different ship types are involved. The table below lists the g.r.t./d.w.t. ratio for all main ship types and size ranges. In determining the values, ships under 200 d.w.t. have been excluded; certain ship types have been included for the sake of completeness but where it is considered that the g.r.t./d.w.t. ratio is not meaningful, it has been placed in brackets (OECD, 1980, 90).

TABLE OF TONNAGE CONVERSION COEFFICIENTS.

| Vessel Type | d.w.t. coefficient |
|---|---|
| 200 - 5,000 d.w.t. | 1.66 |
| 5,000 - 10,000 d.w.t. | 1.64 |
| 10,000 - 25,000 d.w.t. | 1.56 |
| 25,000 - 60,000 d.w.t. | 1.69 |
| 60,000 - 80,000 d.w.t. | 1.87 |
| 80,000 - 150,000 d.w.t. | 1.93 |
| crude oil tankers (all sizes) | [1.94] |
| Source: OECD, 1980, 90. | |

ULCC: Ultra-Large Crude Carrier. Not a precisely defined term, but generally tankers larger than 275,000 d.w.t..

VLCC: Very Large Crude Carrier. Not a precisely defined term, but generally tankers larger than 175,000 d.w.t. but less than 275,000 d.w.t..

## UNITS OF MEASURE AND CONVERSION EQUIVALENTS

### Conventional Weight Equivalents

| American | avoirdupois | metric system |
|---|---|---|
| 1 short ton | = 2,000 lbs. | = 0.907 metric tons |
| 1 long ton | = 2,240 lbs. | = 1.016 metric tons |
| 1.102 tons | = 2,205 lbs. | = 1 metric ton |
| 1 pound (lb.) | = | 0.453 kilograms |
| 2.207 pounds (lbs.) | = | 1 kilogram (kg) |

### Conventional Capacity Equivalents

| | | |
|---|---|---|
| 1 barrel | = | 42 U.S. gallons |
| 1 long ton | = | 7.33 barrels |

### Conventional Measurement Equivalents

| | | |
|---|---|---|
| 1 mile | = | 1.609 kilometers |
| 0.622 miles | = | 1 kilometer (km) |

### Maritime Weight Equivalents

| | | |
|---|---|---|
| 1 deadweight ton | = | 1 long ton |
| 1 gross ton | = | 100 cubic feet |

Note: When the type of ton(s) is not specified it is then the short ton that is being given as the weight.

Note: As a general figure for quick calculations, one U.S. dollar ($) is equal to 3.46 Saudi Riyals (SRs).

BIBLIOGRAPHY

Abu-Khadra, Rajai M., 1982: Re-energising Arab involvement in oil transportation, Arab Shipping 1982, Fifth Edition: 17-19, Seatrade Publications Ltd., Colchester, England.

Al-Diwani, Abdul Wahab, 1983: Changing incentives for a seagoing career, Arab Shipping 1983, Sixth Edition: 17, Seatrade Publications Ltd., Colchester, England.

Al-Jadir, Adib, 1982: Eliminating a barrier to Arab fleet expansion, Arab Shipping 1982, Fifth Edition: 11-13, Seatrade Publications Ltd., Colchester, England.

Al-Turki, Abdulaziz M., 1983: Arab liner shipping aims get a sense of direction, Arab Shipping 1983, Sixth Edition: 19-23, Seatrade Publications Ltd., Colchester, England.

ARAMCO, 1980: ARAMCO And Its World, Dhahran, Saudi Arabia.

Business International, 1981: Saudi Arabia: Issues for Growth (a Business International Research Report), New York, New York.

Cockett, Neil, and Peter Hunt, 1982: A competitive Middle East market provides a stabilizing influence, Arab Shipping 1982, Fifth Edition: 23-25, Seatrade Publications Ltd., Colchester, England.

Couper, A.D., 1980: New Arab awareness -- but plans for regional training suffer a setback, Arab Shipping 1980, Third Edition: 33-35, Seatrade Publications Ltd., Colchester, England.

Crane, Robert D., 1978: Planning The Future of Saudi Arabia, Praeger Publishers, New York, New York.

Craven, John P., 1976: The Future Of The Sea Based Deterrent, Adelphi Paper No. 124, Institute for Strategic Studies, London, England.

Drewry Shipping Consultants Ltd., 1982: The Oil Exporting Countries And Shipping -- Ambitions And Realities, No. 104, August 1982, Drewry Shipping Publications, London, England.

E.I.U.: Quarterly Economic Review of Kuwait (all issues and annual supplements from No. 2, 1978 through No. 3, 1983), London, England.

E.I.U.: Quarterly Economic Review of Saudi Arabia, Jordan (all issues and annual supplements from No. 1, 1973 through No. 1, 1978), London, England.

E.I.U.: Quarterly Economic Review of Saudi Arabia (all issues and annual supplements from No. 2, 1978 through No. 3, 1983), London, England.

El Mallakh, Ragaei, 1982: Saudi Arabia -- Rush To Development, The John Hopkins University Press, Baltimore, Maryland.

Europa, 1983: The Middle East And North Africa 1983-1984, Thirtieth Edition, Europa Publication Ltd., London, England.

Fairplay, 1980: World Shipping Yearbook 1980, Fairplay Publications Ltd., London, England.

Farsy, Fouad, 1978: Saudi Arabia: A Case Study In Economic Development, Stacey International, London, England.

Fesheraki, Fereidun, 1982: (personal communication), Research Associate of the Resource Systems Institute and the OPEC Downstream Project at the East-West Center, Honolulu, Hawaii.

Frankel, Ernst G., and Henry S. Marcus, 1973: Ocean Transportation, Massachusetts Institute of Technology Press, Cambridge, Massachusetts.

Glick, Leslie Alan, 1980: Trading With Saudi Arabia: A Guide to the Shipping, Trade, Investment, and Tax Laws of Saudi Arabia, Allanheld, Osman & Company Publishers Inc., Montclair, New Jersey.

Isaak, David T., 1984: (personal communication), Research Associate of the OPEC Downstream Project at the East-West Center, Honolulu, Hawaii.

Issawi, Charles Philip, 1982: An Economic History Of The Middle East and North Africa, Columbia University Press, New York, New York.

Krem, Alex, 1980: The legacy of Sinbad -- development of a successful Arab Merchant fleet, Arab Shipping 1980, Third Edition: 16-21, Seatrade Publications Ltd., Colchester, England.

Lawrence, Samuel A., 1972: International Sea Transport: The Years Ahead, D.C. Heath & Company, Lexington, Massachusetts.

Lloyd's Register of Shipping: Lloyd's Register of Shipping Statistical Tables (for the years 1968, 1970 through 1982), London, England.

Lones, Trevor, 1978: Arab maritime training facilities and future requirements, Arab Shipping 1978, First Edition: 33-35, Seatrade Publications Ltd., Colchester, England.

Martin, Esmond Bradley, and Chryssee Perry Martin, 1978: Cargoes Of The East, Elm Tree Books, London, England.

Mercer, Chris, 1982: Satisfying Middle East demand for live sheep -- at 125,000 head per vessel, Arab Shipping 1982, Fifth Edition: 19-23, Seatrade Publications Ltd., Colchester, England.

Ministry of Petroleum and Mineral Resources, 1981: Petroleum Statistical Bulletin, 1980, No. 11, Riyadh, Saudi Arabia.

Moliver, Donald M., and Paul J. Abbondante, 1980: The Economy of Saudi Arabia, Praeger Publishers, New York, New York.

Normann, Carl, 1983: (personal communication), Manager of F.W. Hartmann & Company Inc. (General shipping agents for NSCSA in New York), New York, New York.

NSCSA, 1982: The National Shipping Company of Saudi Arabia (Public Relations Information Brochure), Riyadh, Saudi Arabia.

OECD, Maritime Transport Committee: Maritime Transport (for the years 1980 and 1981), Paris, France.

Porter, K.S., 1983: (personal communication), Manager of American Services of the United Arab Shipping Company, S.A.G., Cranford, New Jersey.

Rathjen, Hermann, 1983: (personal communication), Former German advisor to the Saudi Ports Authority with a mandate to shape port policy, Hamburg, West Germany.

Rittmann Ltd., 1983: International Transport Journal Overseas Edition 12 (March 25, 1983), Basle, Switzerland.

Rostow, W.W., 1961: The Stages of Economic Growth, Cambridge University Press, Cambridge, England.

Salman Al-Hashim, Salman D., 1983: Foundations of a strong Arab shipping policy, Arab Shipping 1983, Sixth Edition: 9-13, Seatrade Publications Ltd., Colchester, England.

Sayigh, Yusif A., 1978: The Economies Of The Arab World (Chapter 4), St. Martin's Press Inc., New York, New York.

Seatrade Publications Ltd.: Arab Shipping (for the years 1982 and 1983), Vokos Publishing, Colchester, England.

Seaward, Nick, 1980: Boxes oust ro/ros in cargo stakes, Arab Shipping 1980, Third Edition: 11-13, Seatrade Publications Ltd., Colchester, England.

Statesman's Yearbook, 120th Edition, 1983, St. Martin's Press Inc., New York, New York.

Tucker, Stanley E., 1980: Oil and gas outlook transformed, Arab Shipping 1980, Third Edition: 13-17, Seatrade Publications Ltd., Colchester, England.

U.N. Department of International Economic and Social Affairs Statistical Office: Statistical Yearbook (for the years 1968, 1970, 1972, 1976, 1979, 1981), United Nations Publishing Division, New York, New York.

U.S. Department of Commerce, Maritime Administration: Merchant Fleets Of The World (for the years 1960 through 1971), U.S. Government Printing Office, Washington, D.C..